Figure 1. Causal pathway

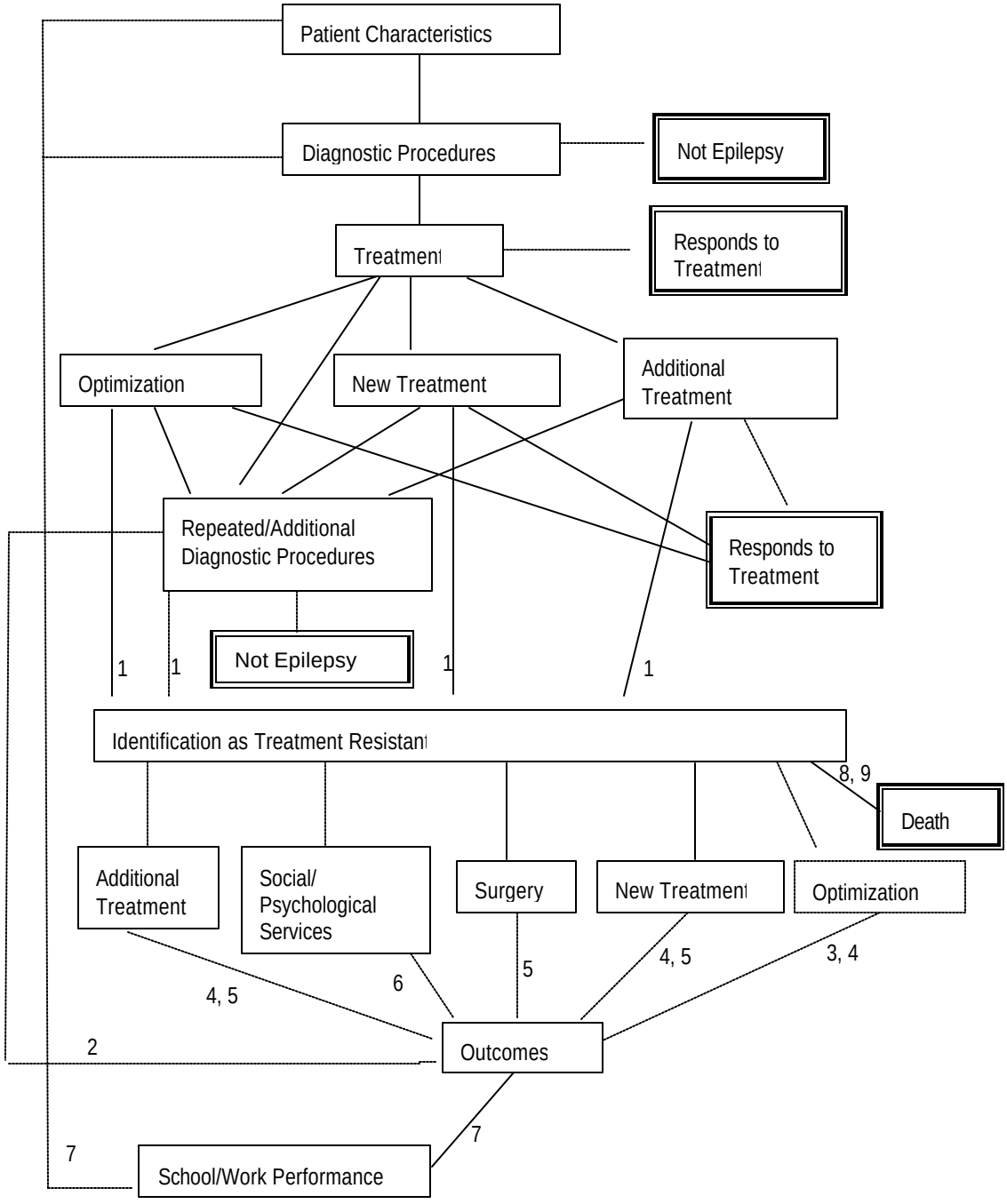
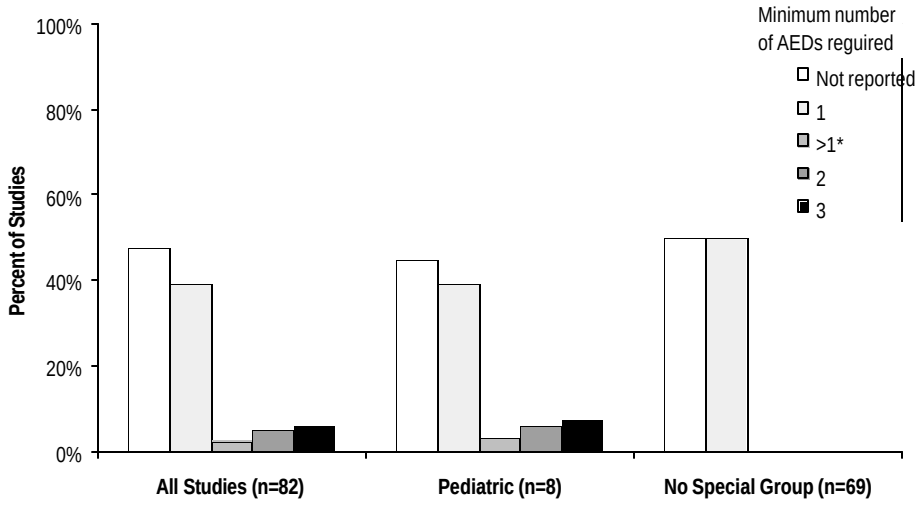
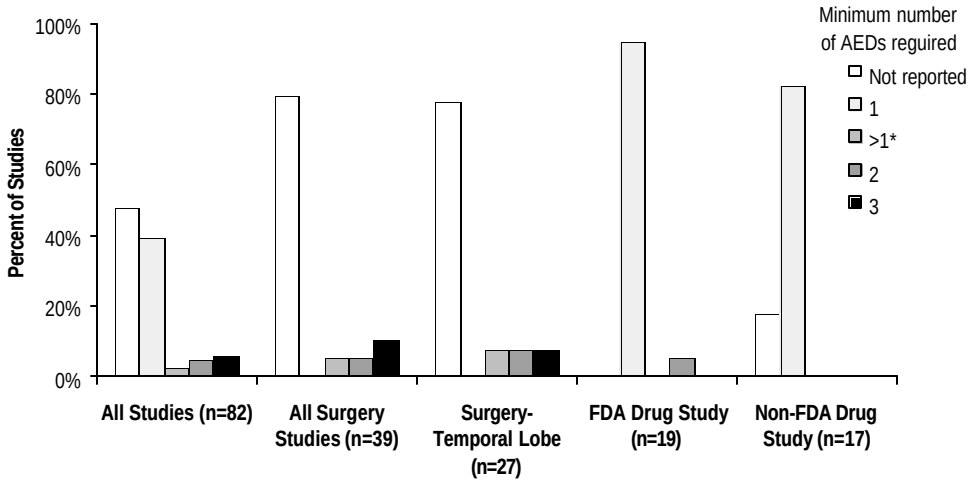


Figure 2. Minimum number of AEDs: different patient types



* ">1" indicates that the study used a nonspecific term such as "several"

Figure 3. Minimum number of AEDs: different treatments



* ">1" indicates that the study used a nonspecific term such as "several"

Figure 4. Minimum baseline seizure frequency: different patient types

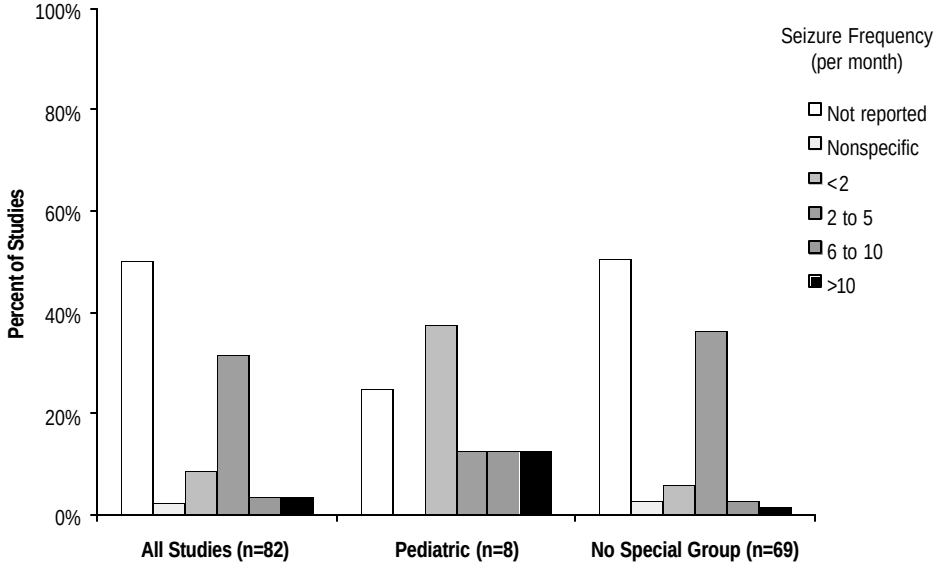


Figure 5. Minimum baseline se izure frequency: different treatments

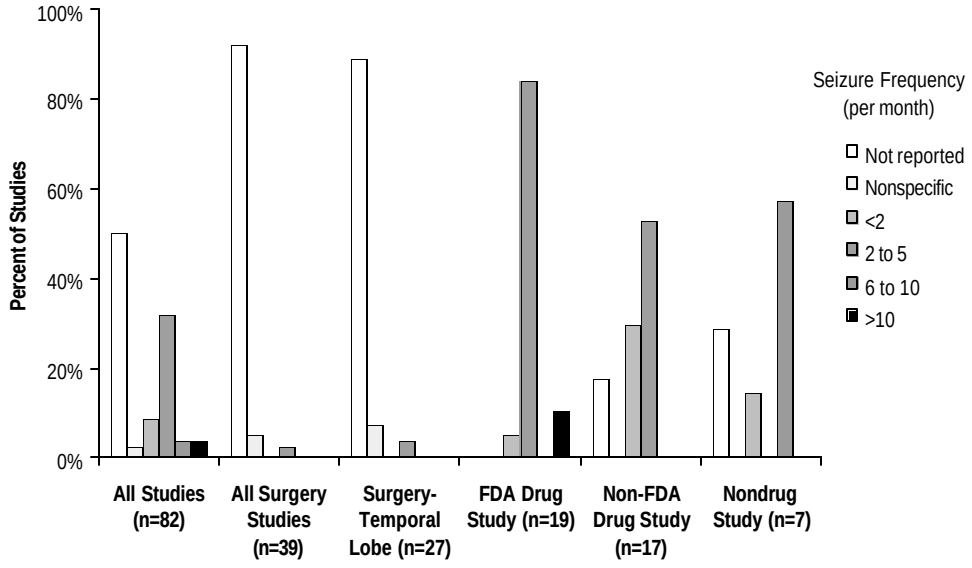
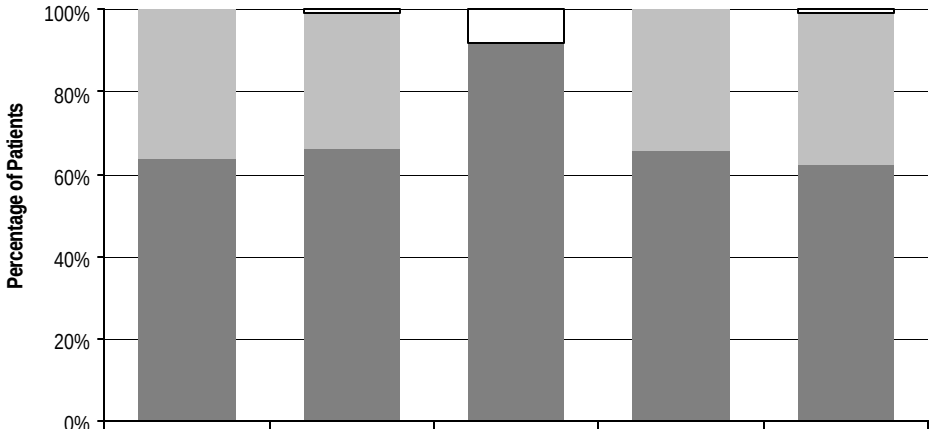


Figure 6. Prevalence of nonepileptic seizures

Prevalence of nonepileptic seizures among patients diagnosed with treatment-resistant epilepsy



	Zaidi (2000)	Holmes (1998)	Henry (1997)	Arnold (1996)	Slater (1995)
NES plus ES	0	3	12	0	1
NES Only	13	111	0	14	37
ES Only	23	224	133	27	63

NES: Non-epileptic seizure
ES: Epileptic seizure

Figure 7. Blood prolactin: discrimination between epileptic and syncopal seizures

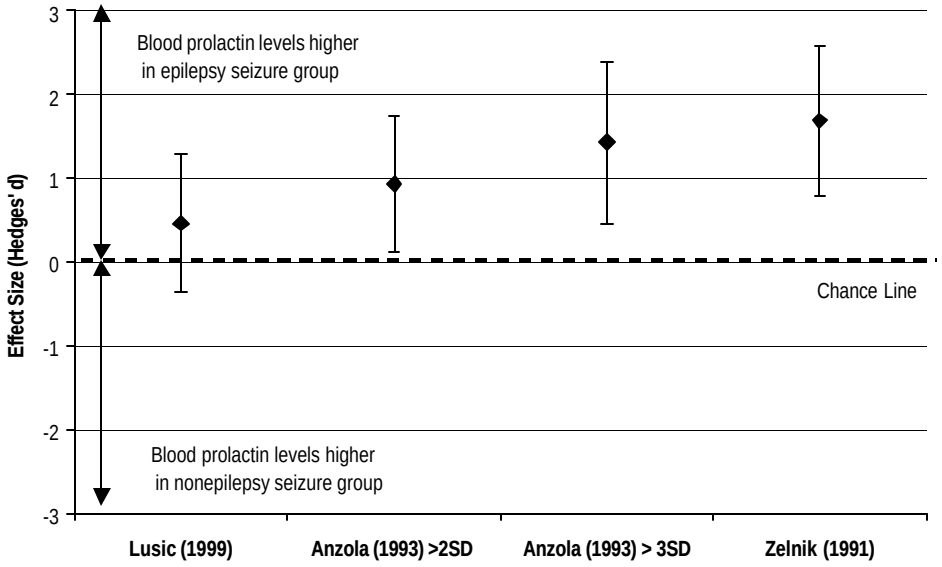


Figure 8. Differences in threshold when evaluating test performance in studies of blood prolactin measurement

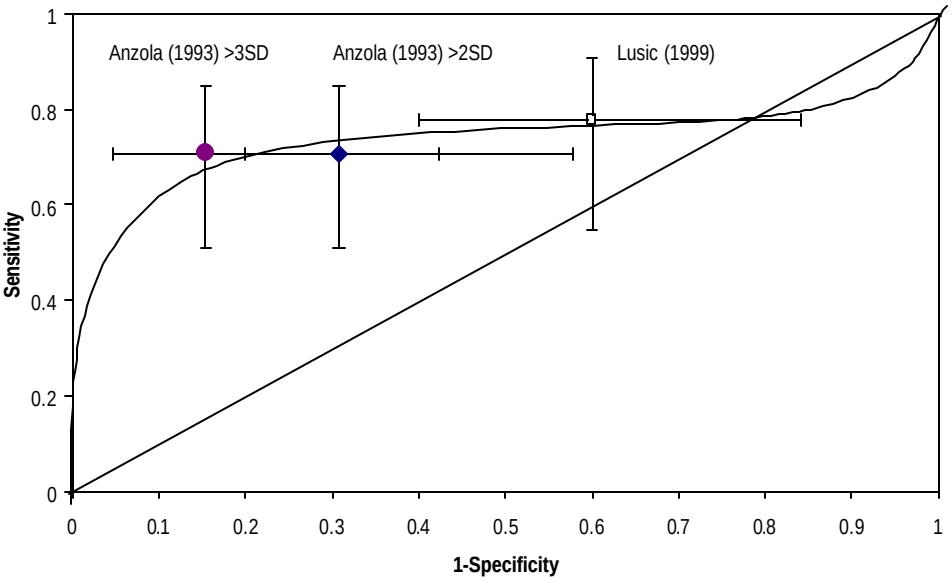


Figure 9. Blood prolactin: discrimination between epileptic and psychogenic seizures

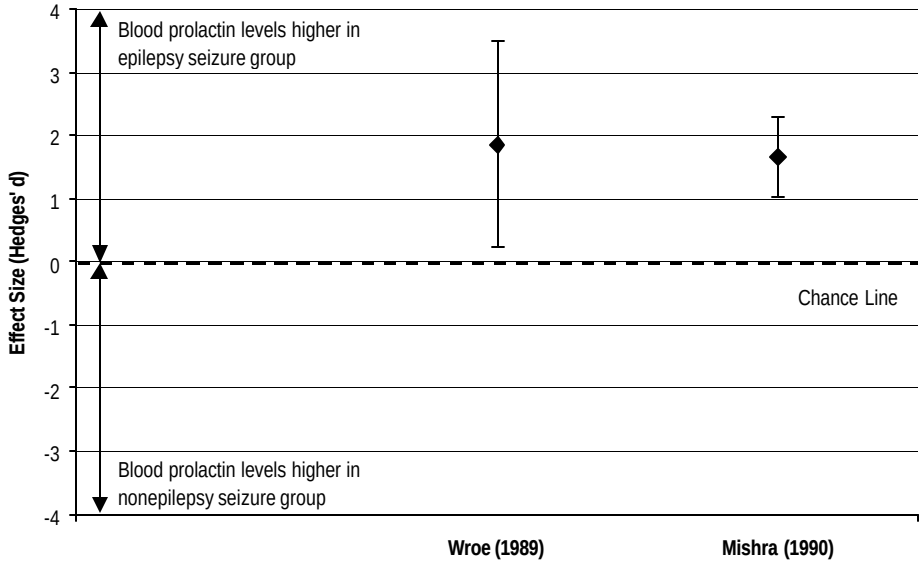


Figure 10. Blood prolactin: discrimination between different epileptic seizure types and psychogenic seizures

Data abstracted from Mishra (1990), GTCS: Generalized tonic-clonic seizures, CPS: Complex partial seizures, SPS: Simple partial seizures

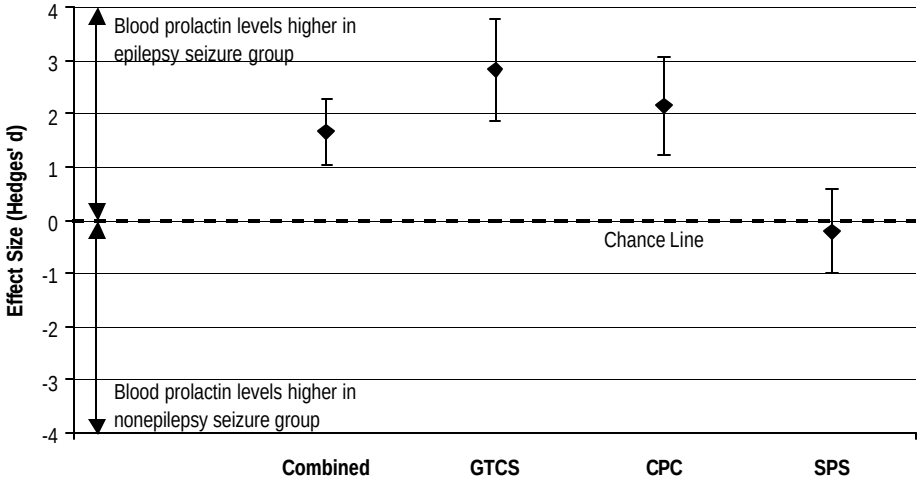


Figure 11. Threshold analysis: sequential monotherapy and seizure freedom

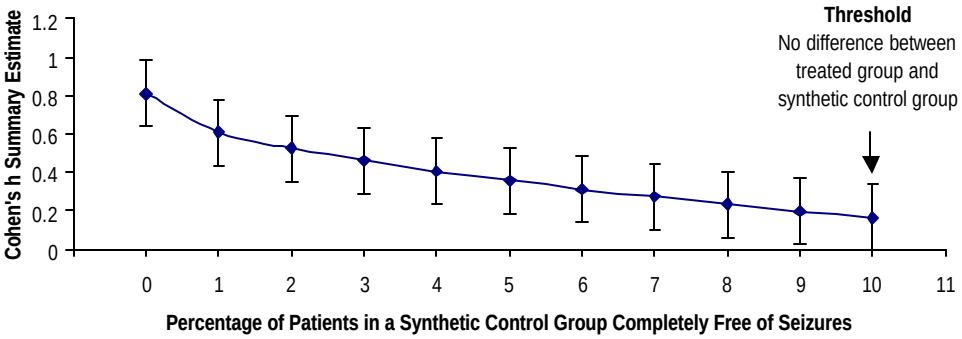


Figure 12. Threshold analysis: monotherapy and seizure freedom (long-term studies)

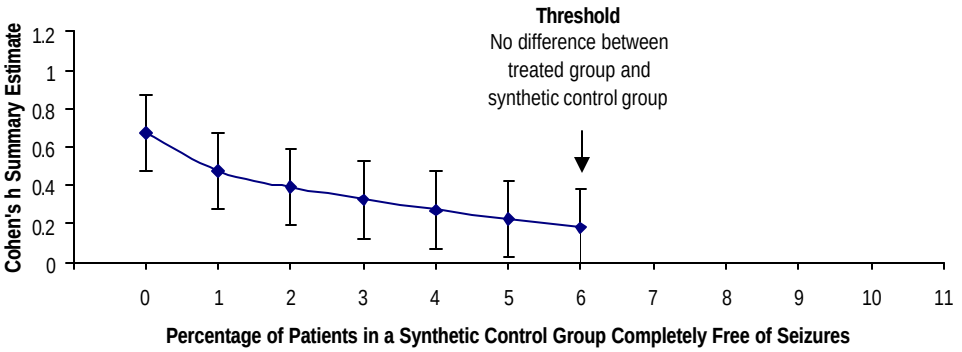


Figure 13. Threshold analysis: monotherapy and doubling of monthly seizure frequency

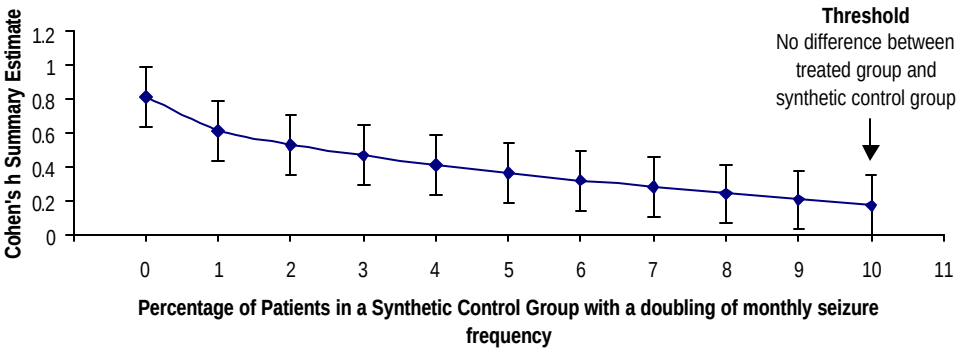


Figure 14. Threshold analysis: monotherapy and doubling of two-day seizure frequency

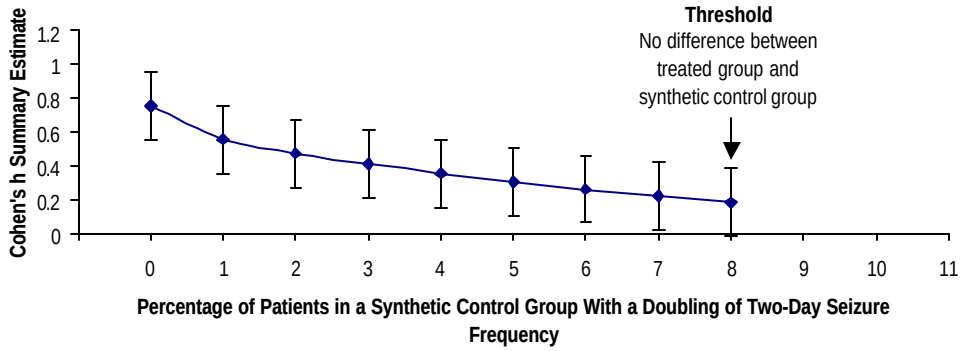


Figure 15. Threshold analysis: monotherapy and trial exits due to adverse effects

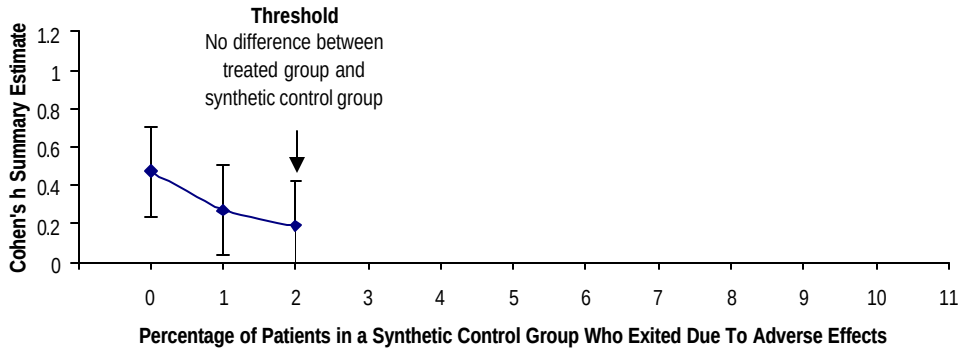
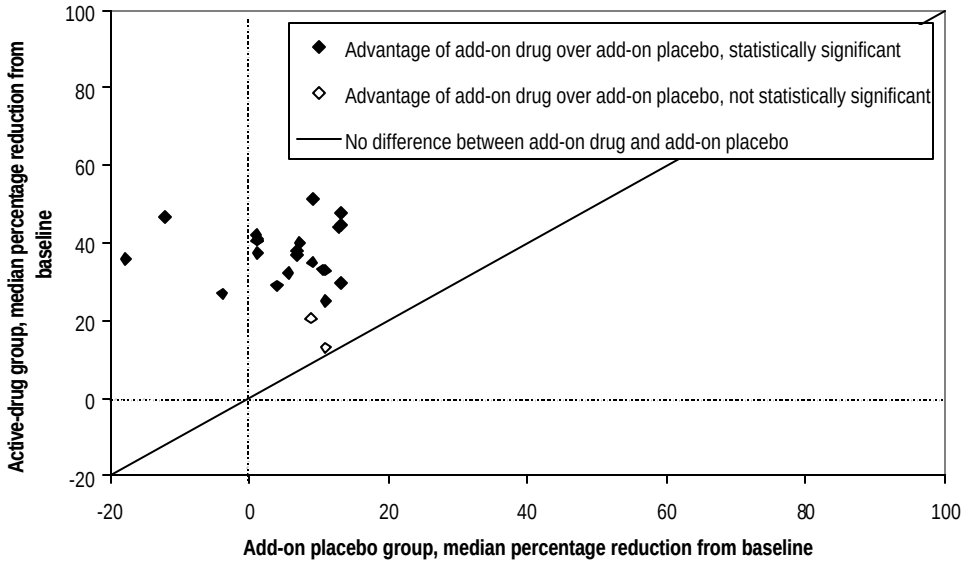


Figure 16. Median percentage reduction in seizures after polytherapy



Note: In this plot, positive numbers represent *reductions* in seizures, whereas negative numbers represent *increases* in seizures.

Figure 17. Forest plot: polytherapy and seizure-freedom (high-dose)

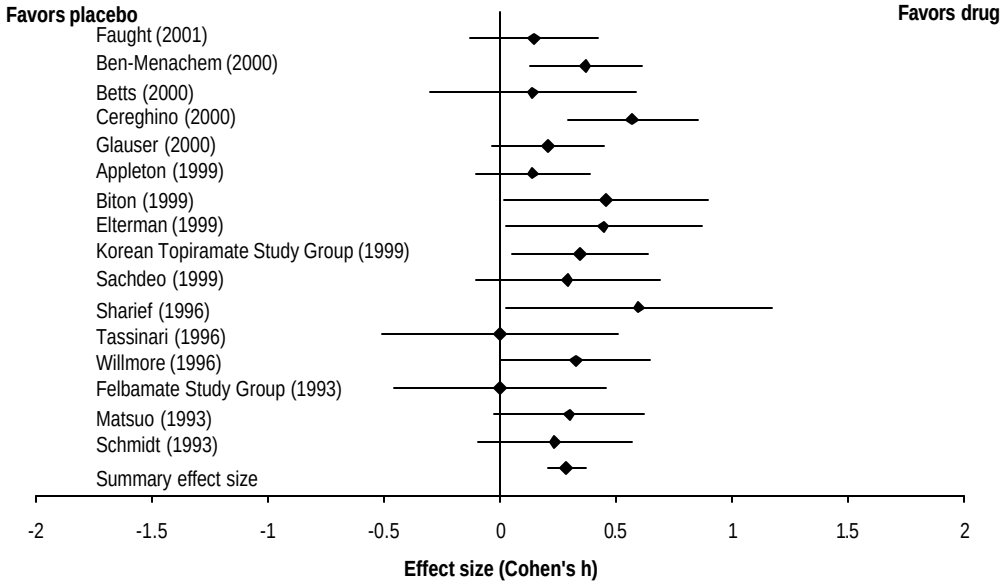


Figure 18. Forest plot: polytherapy and seizure-freedom (low-dose)

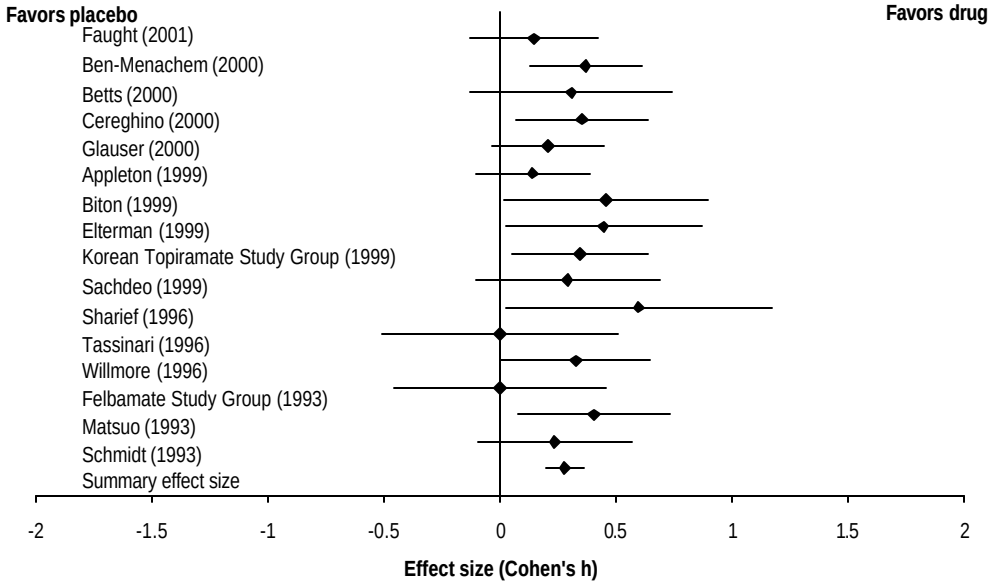


Figure 19. Forest plot: polytherapy and 50 percent seizure reduction (high-dose)

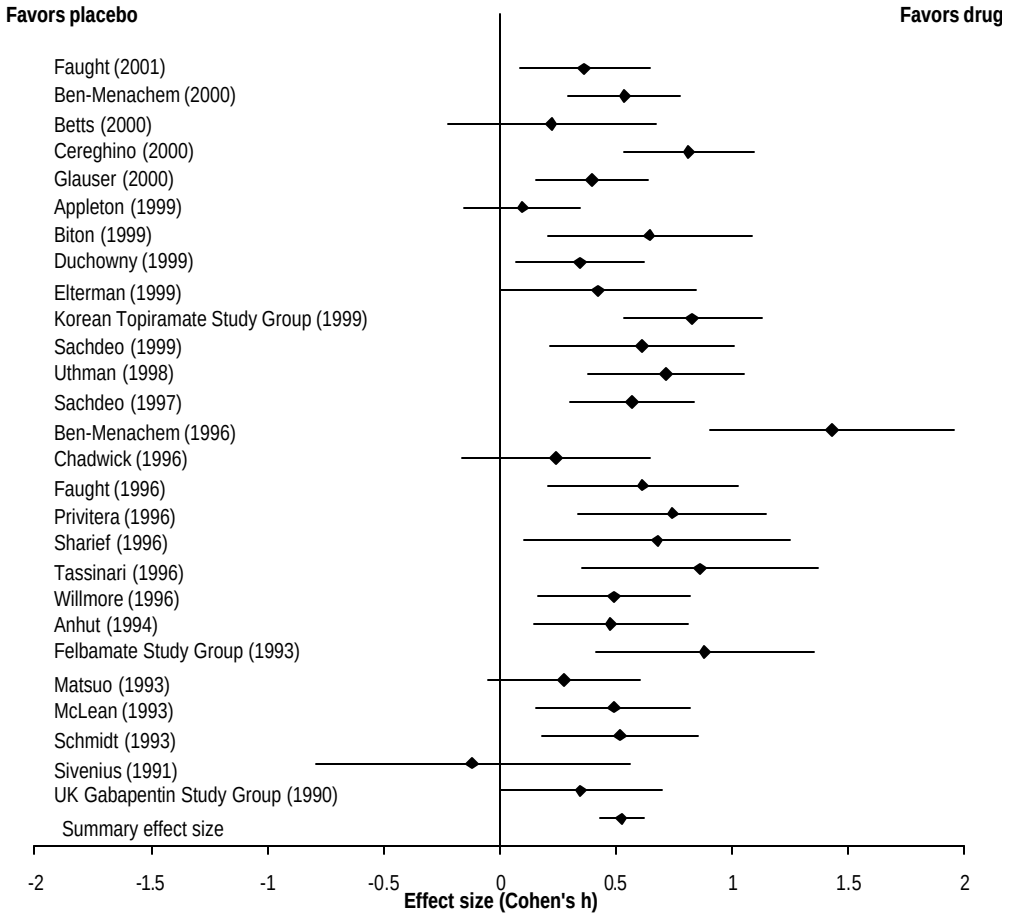


Figure 20. Forest plot: polytherapy and 50 percent seizure reduction (low-dose)

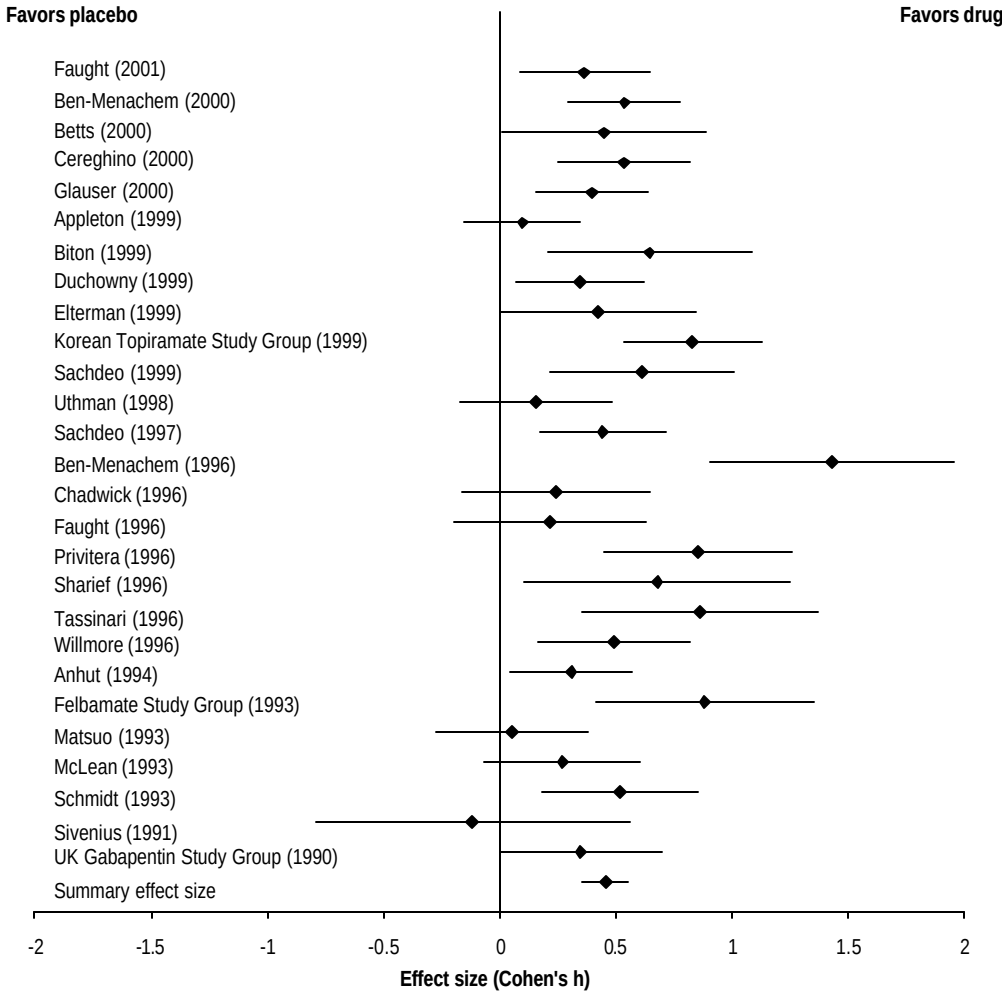


Figure 21. Forest plot: polytherapy and any seizure reduction (high-dose)

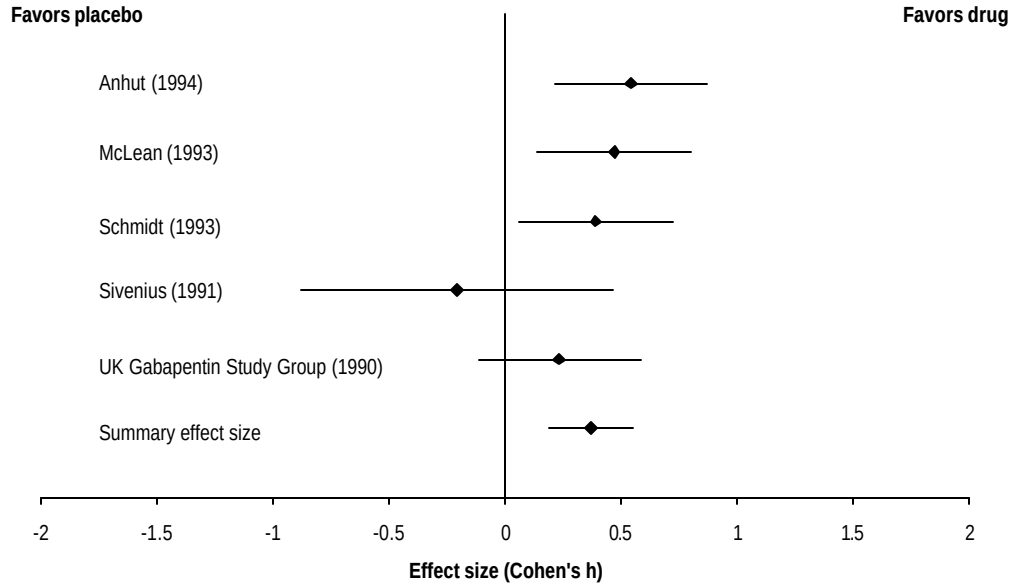


Figure 22. Forest plot: polytherapy and any seizure reduction (low-dose)

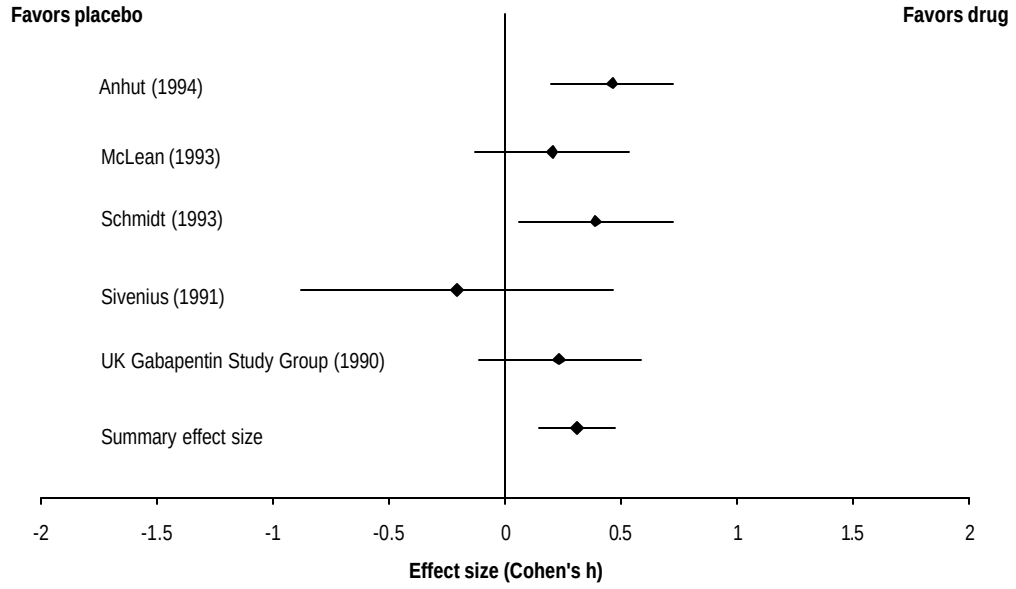


Figure 23. Forest plot: polytherapy and any seizure increase (high-dose)

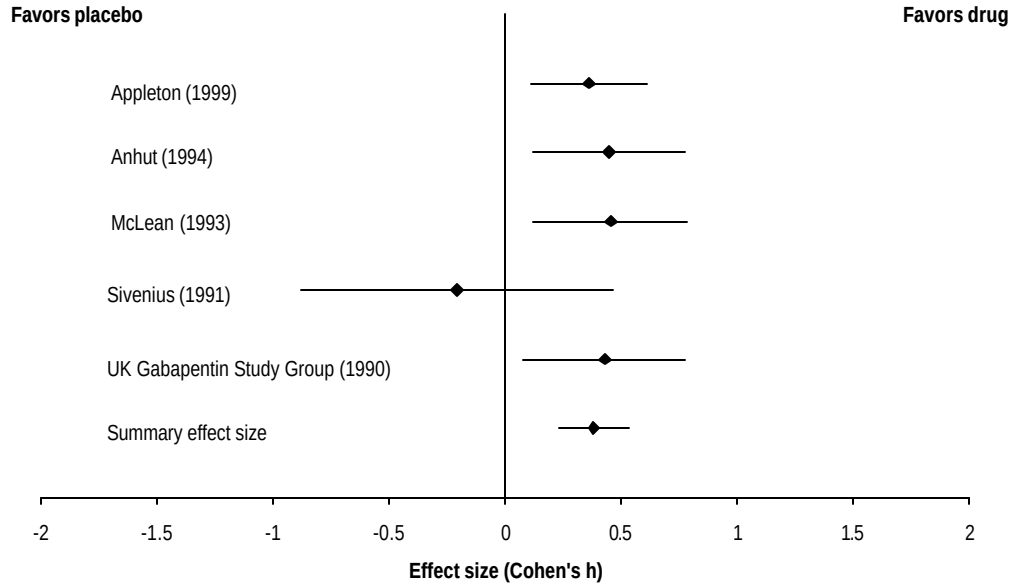


Figure 24. Forest plot: polytherapy and any s eizure increase (low-dose)

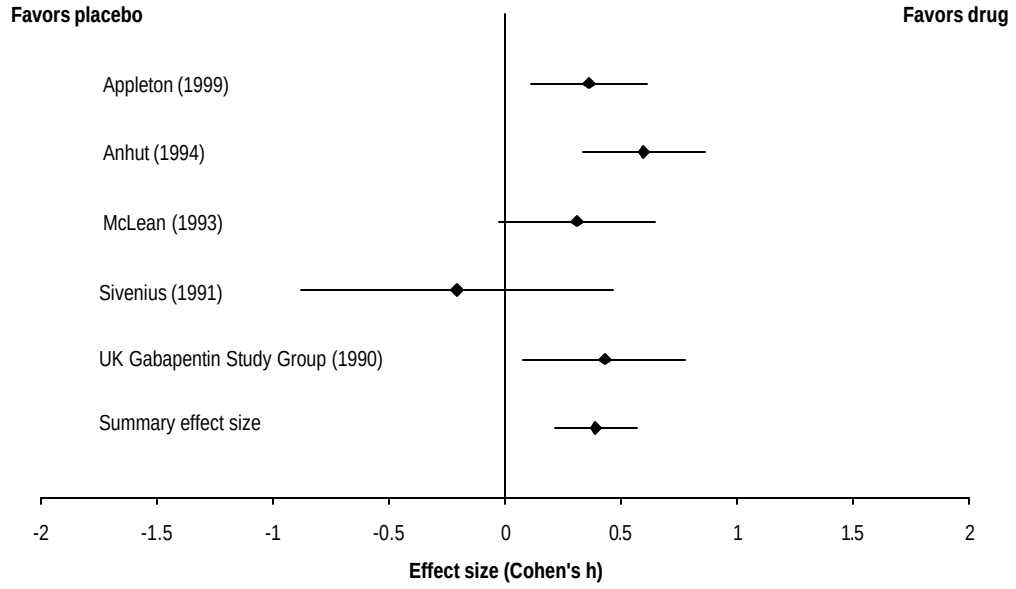


Figure 25. Forest plot: polytherapy and trial exits due to adverse effects (high-dose)

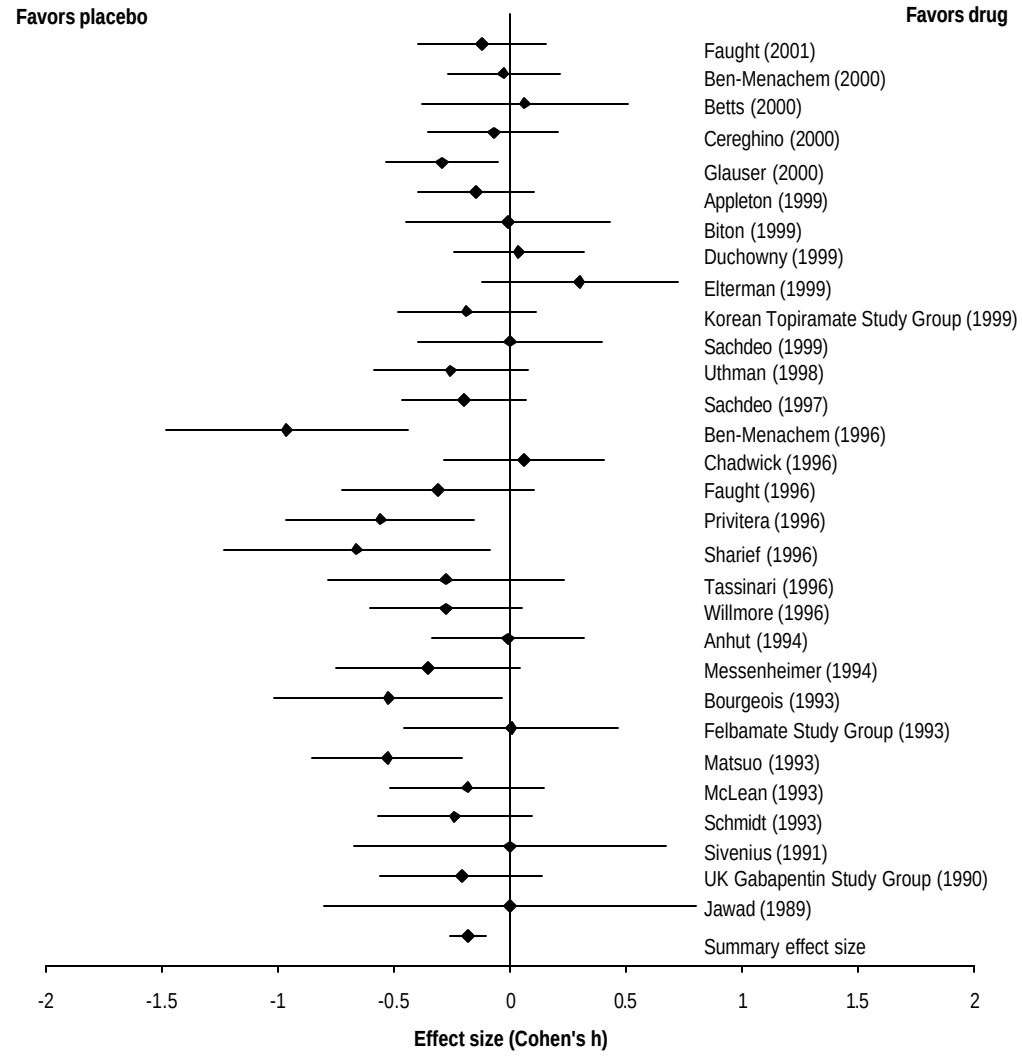


Figure 26. Forest plot: polytherapy and trial exits due to adverse effects (low-dose)

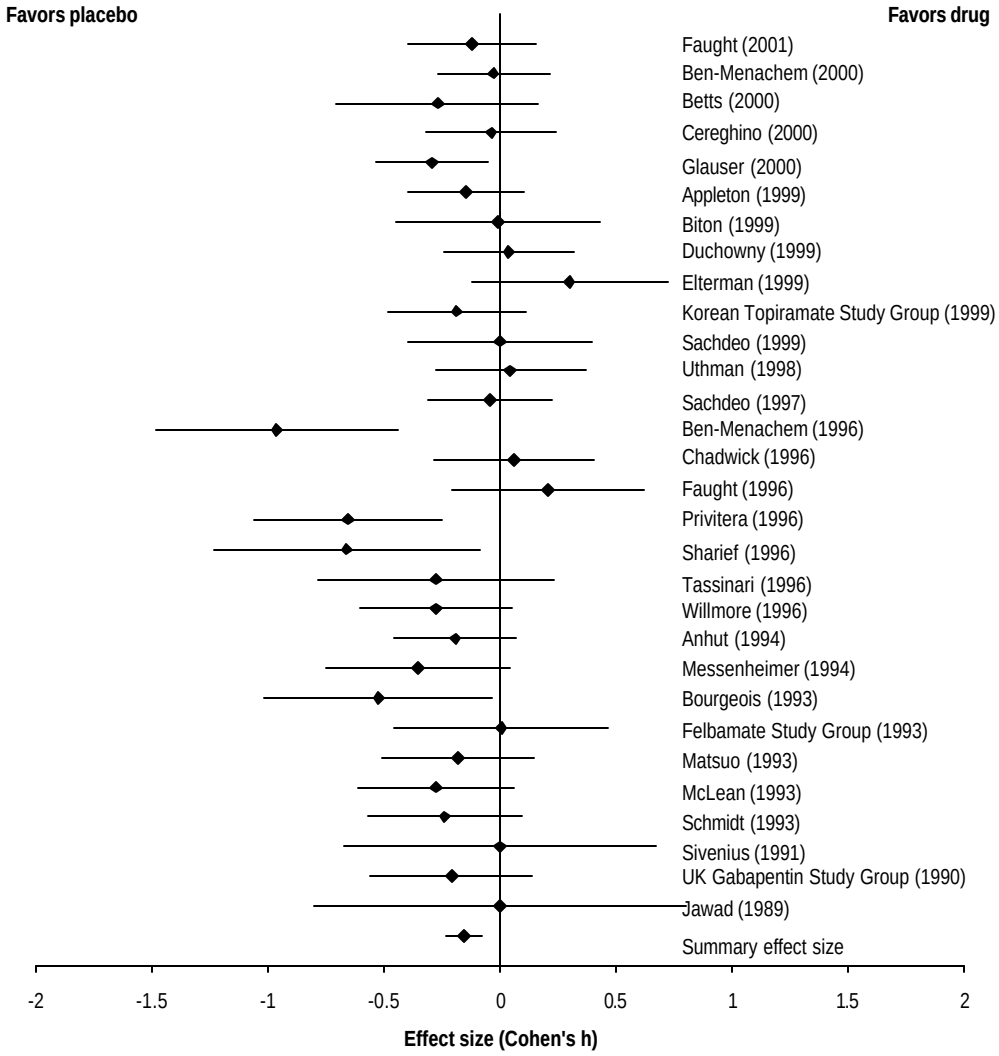


Figure 27. Tradeoff between seizure frequency and adverse effects

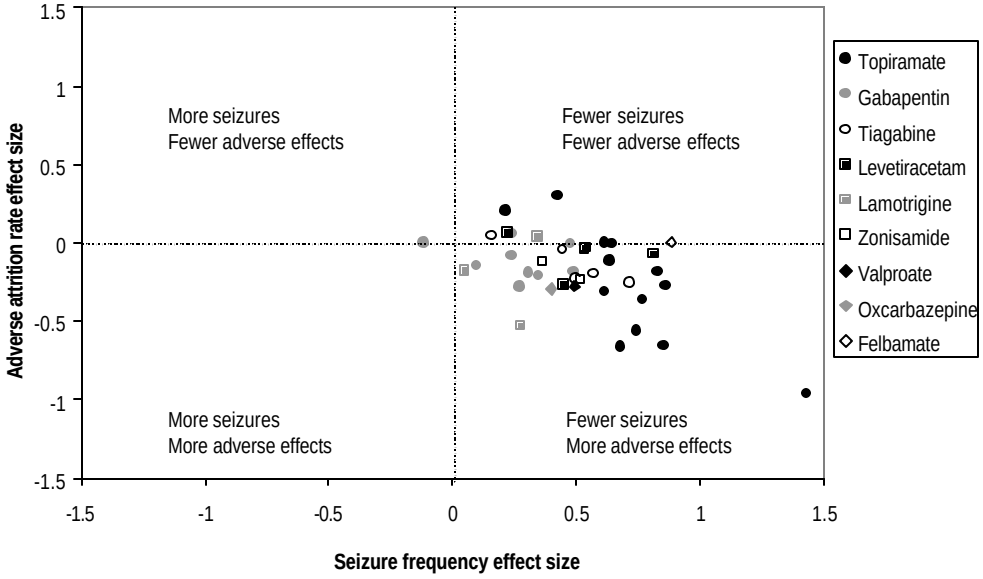
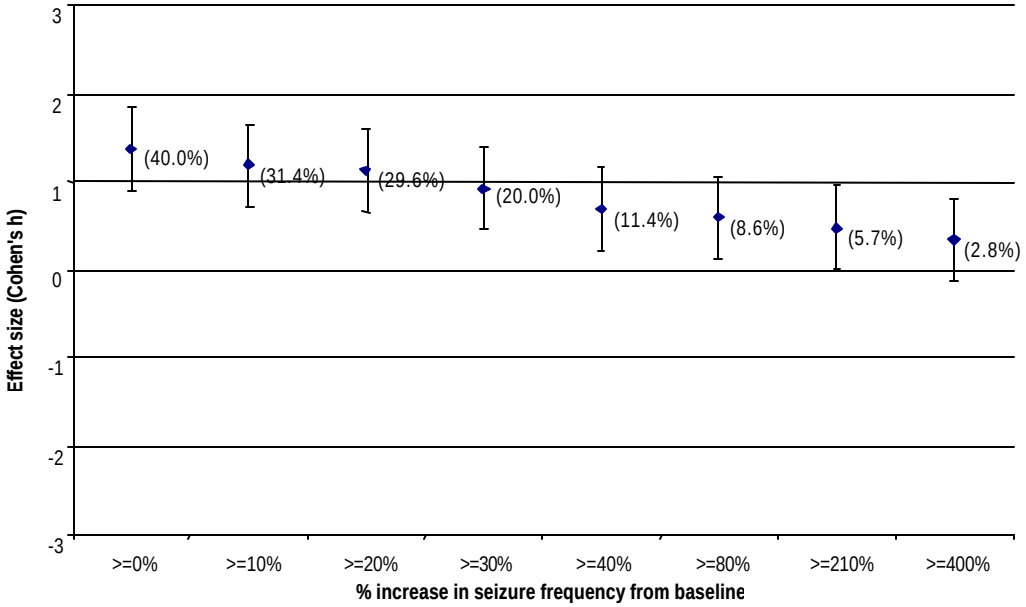


Figure 28. Increase in seizure frequency and drug reduction strategies

Percentage presented in parentheses is the actual proportion of patients with seizure frequencies greater than the percent increase in seizure frequency shown on the X-axis. The diamond and error bars represent the effect size and 95% CI.

Specht (1989)[123]



Schmidt (1983)[125]

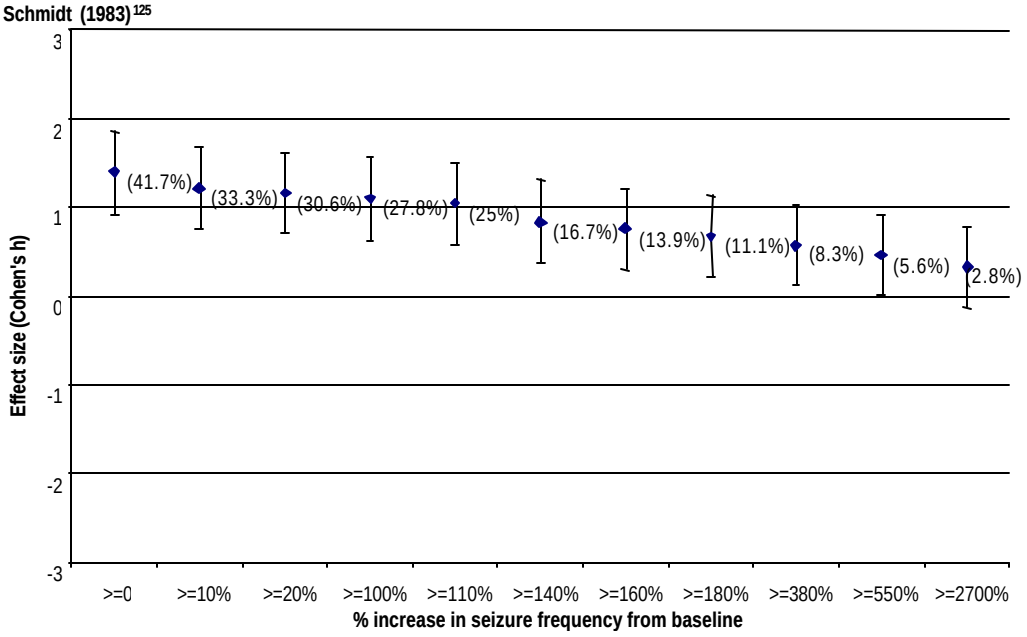
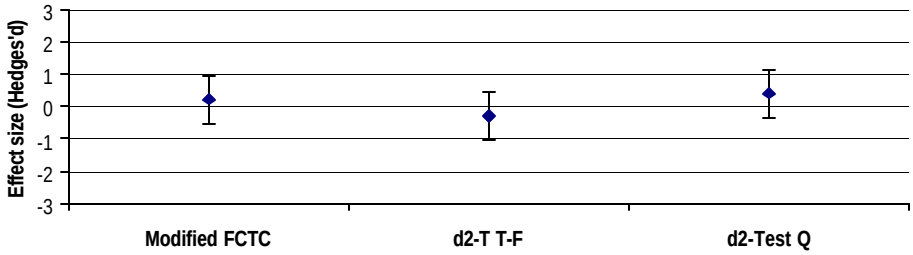
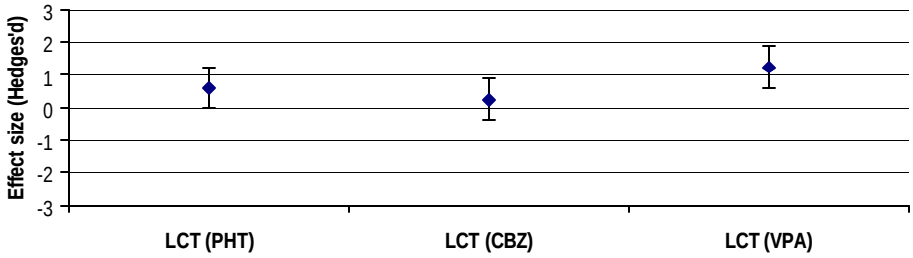


Figure 29. Drug reduction strategies and tests of concentration/attention

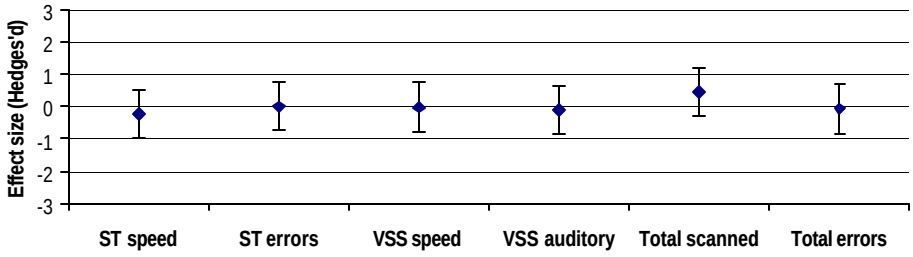
May (1992) [121]



Duncan (1990) [122]



Thompson (1982) [126]



FCCT	Frankfurt Concentration Test for Children
LCT	Letter cancellation task
PHT	Phenytoin vs. Control
CBZ	Carbamezapine vs. Control
VPA	Valprioc acid vs. Control
d2 T T-F	d-2 test total number minus failures
d2 Test Q	d-2 test failure quotient
ST	Stroop Test
VSS	Visual scanning speed

Figure 30. Drug reduction strategies and the Frankfurt Concentration Test for Children

Pre- and posttreatment Frankfurt Concentration Test for Children data from May (1992)[121]

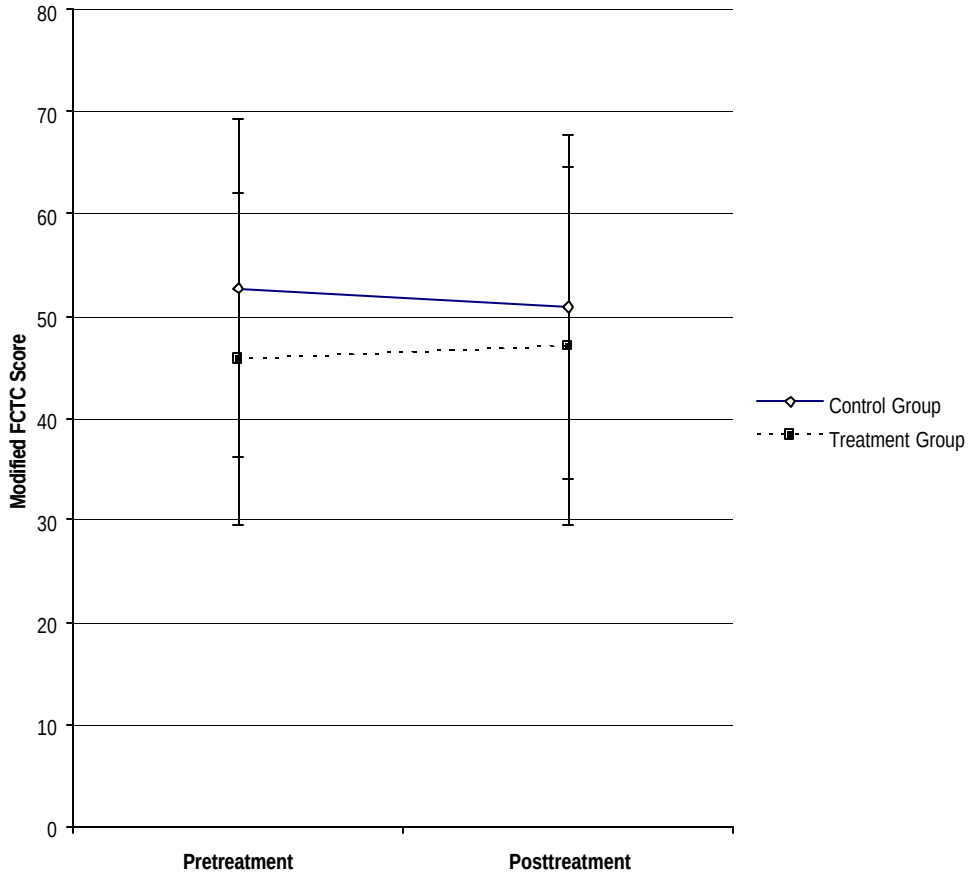
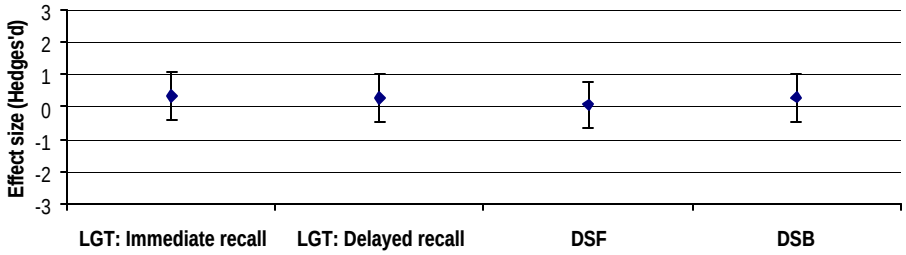
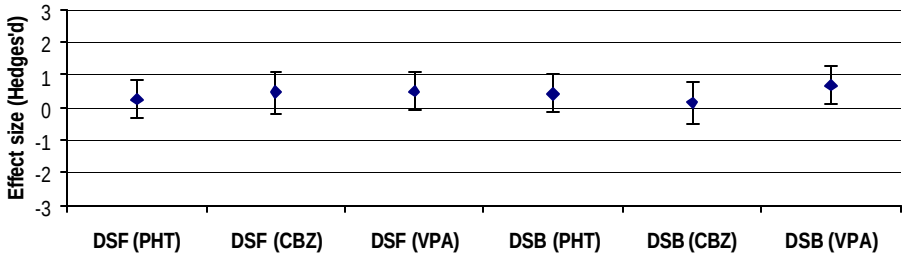


Figure 31. Drug reduction strategies and tests of memory

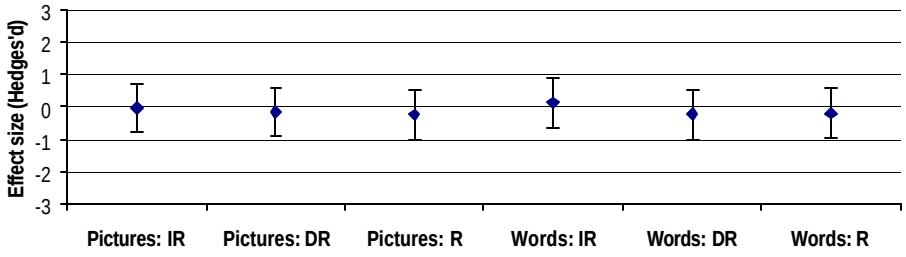
May (1992) [121]



Duncan (1990) [122]



Thompson (1982) [126]



Abbreviations:

LGT	Lern- und Gedachtnis Test
DSF	Digit scan forwards
DSB	Digit scan backwards
PHT	Phenytoin vs. Control
CBZ	Carbamezapine vs. Control
VPA	Valprioc acid vs. Control
IR	Immediate recall
DR	Delayed recall
R	Recognition

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Figure 32. Drug reduction strategies and digital scanning score

Data from Duncan (1990)[122] showing effects of valprioc acid removal on digital scanning score

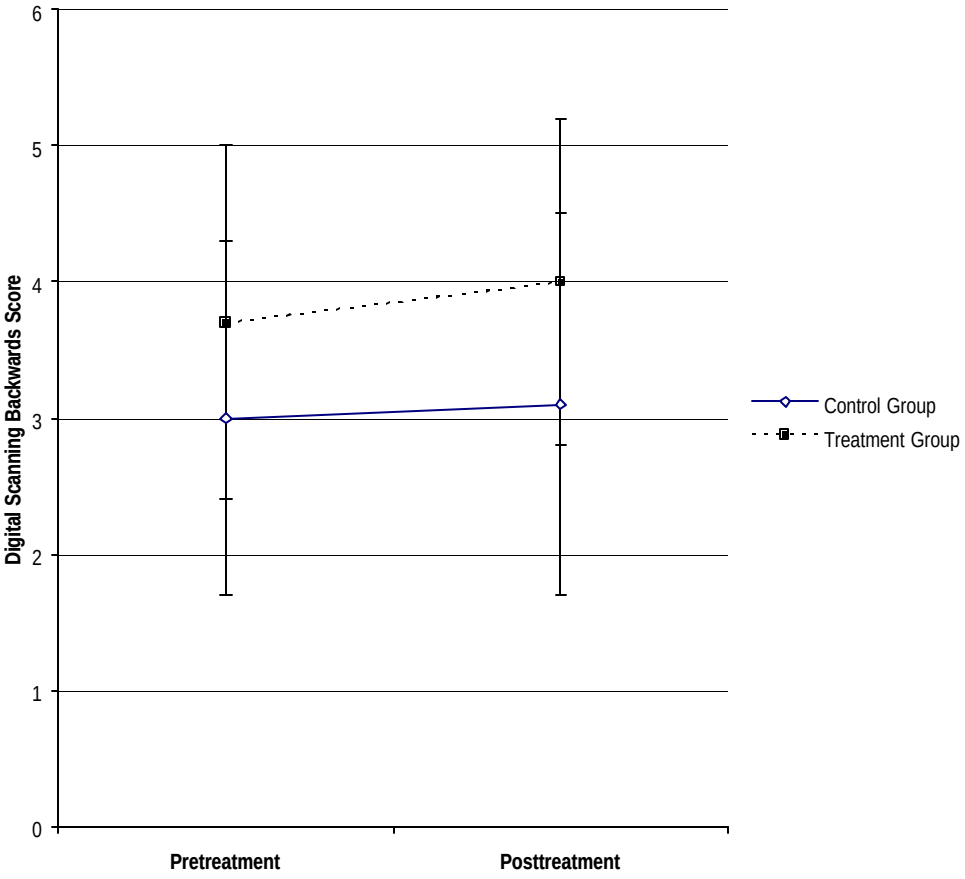
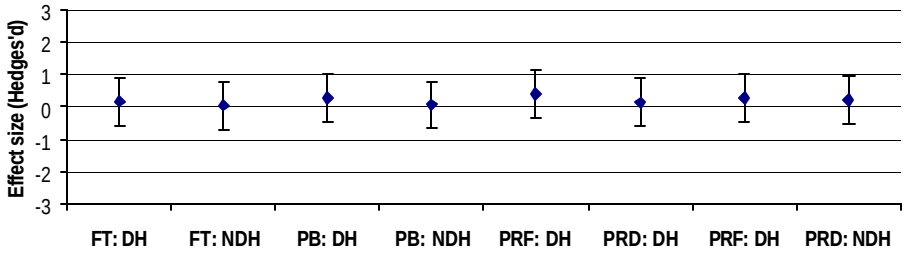
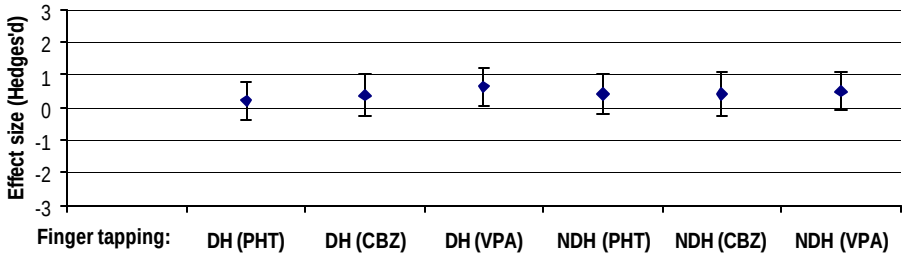


Figure 33. Drug reduction strategies and tests of psychomotor function

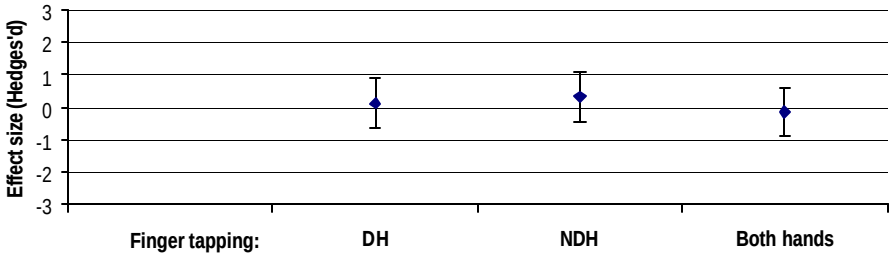
May (1992) [121]



Duncan (1990) [122]



Thompson (1982) [126]

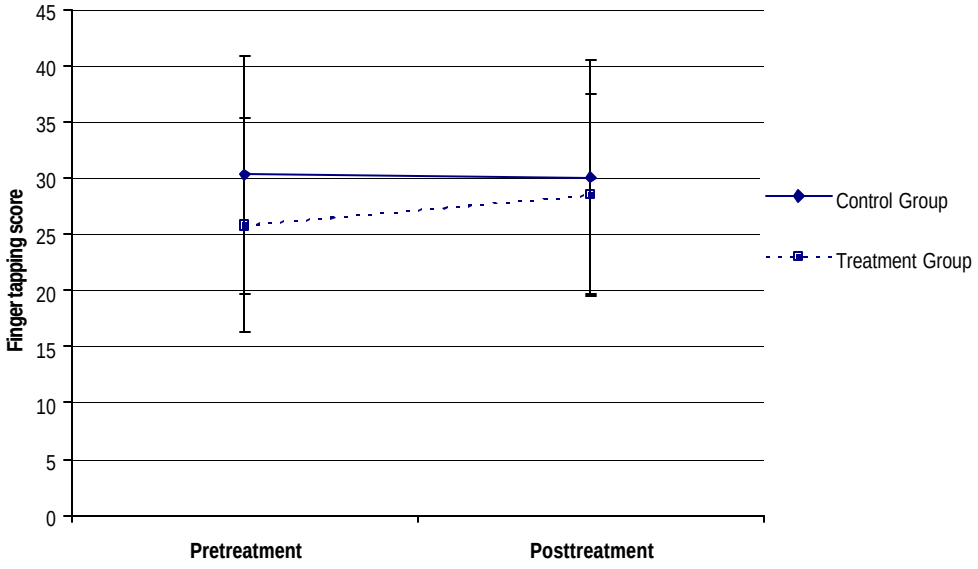


FT	Finger tapping
DH	Dominant hand
NDH	Non-dominant hand
PB	Pegboard
PRF	Pursuit Rotor Failure
PFD	Pursuit Failure Duration
PHT	Phenytoin vs. Control
CBZ	Carbamezapine vs. Control
VPA	Valprioc acid vs. Control

Figure 34. Drug reduction strategies and psychomotor function

Pre-and posttreatment psychomotor function data presented by May (1992) [121]

Finger tapping with dominant hand



Pursuit rotor failure of dominant hand

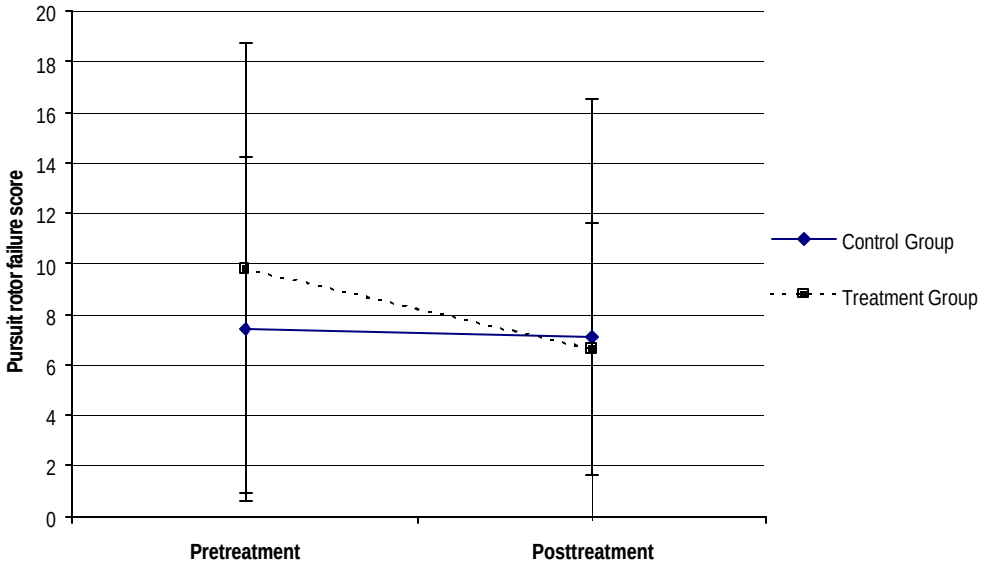
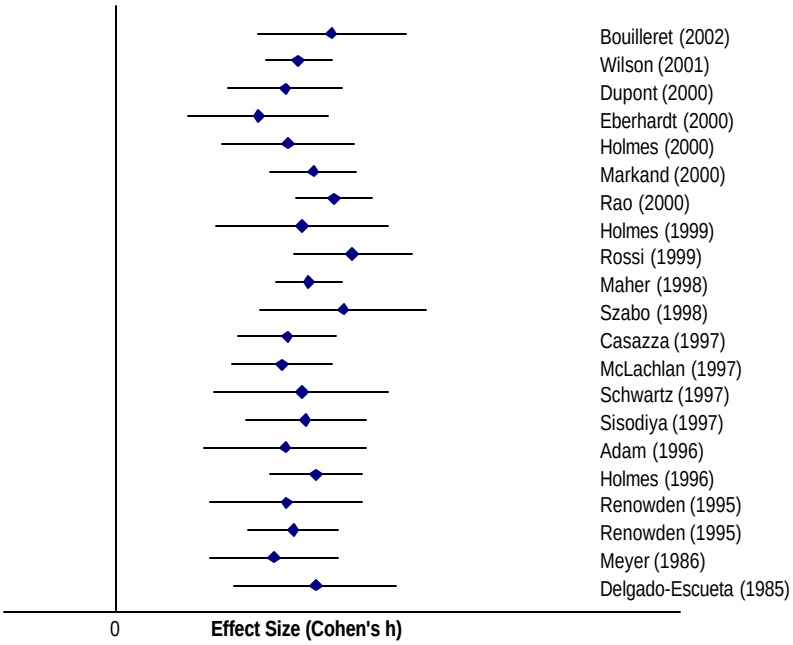


Figure 35. Forest plot: temporal lobe surgery and seizure-free with no auras



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 36. Threshold analysis: temporal lobe surgery and seizure-free with no auras

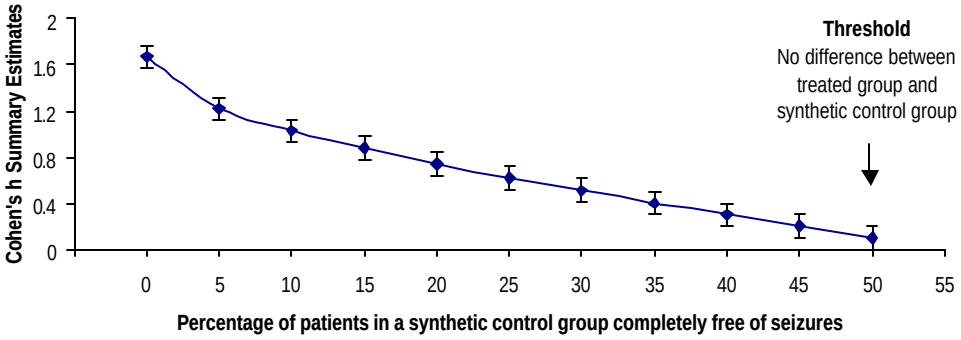
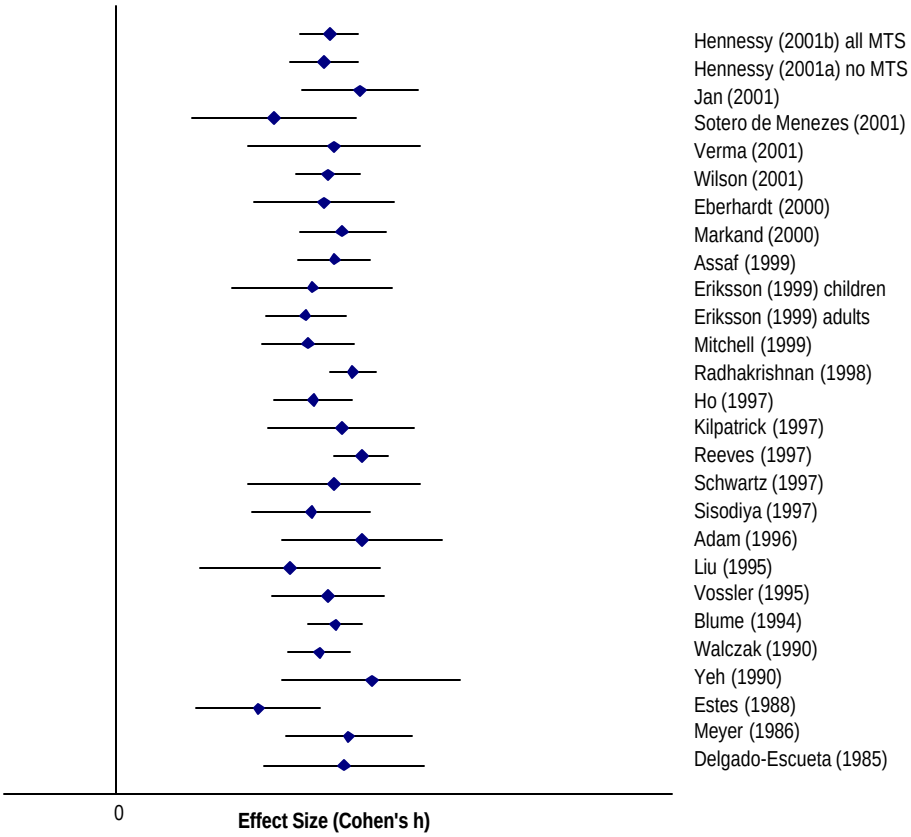


Figure 37. Forest plot: temporal lobe surgery and seizure-free with auras



A scale is not shown because the effect sizes were not calculated with actual control groups
MTS = Patients with mesial temporal sclerosis

Figure 38. Threshold analysis: temporal lobe surgery and seizure-free with auras

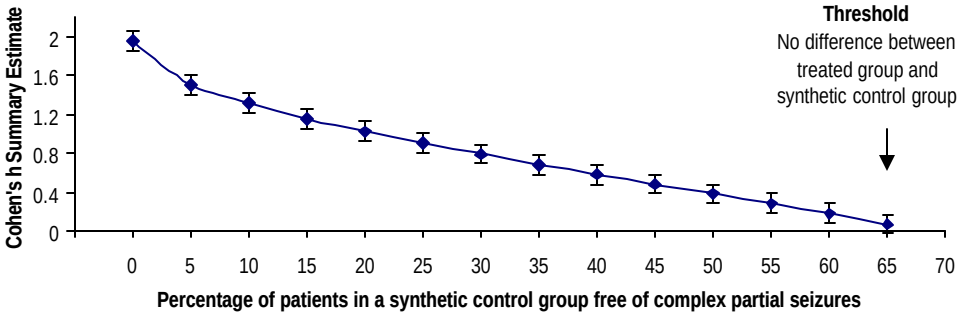
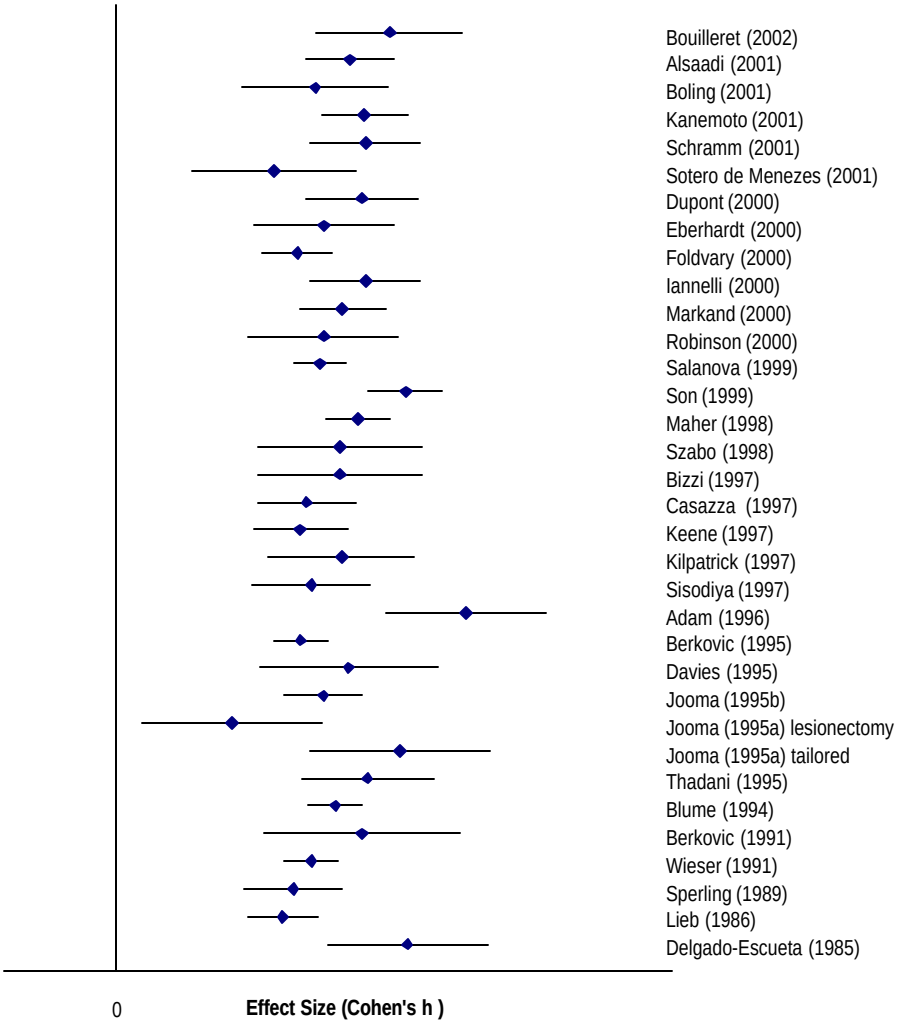


Figure 39. Forest plot: temporal lobe surgery and Engel Class I



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 40. Meta-regression: temporal lobe surgery and Engel class I

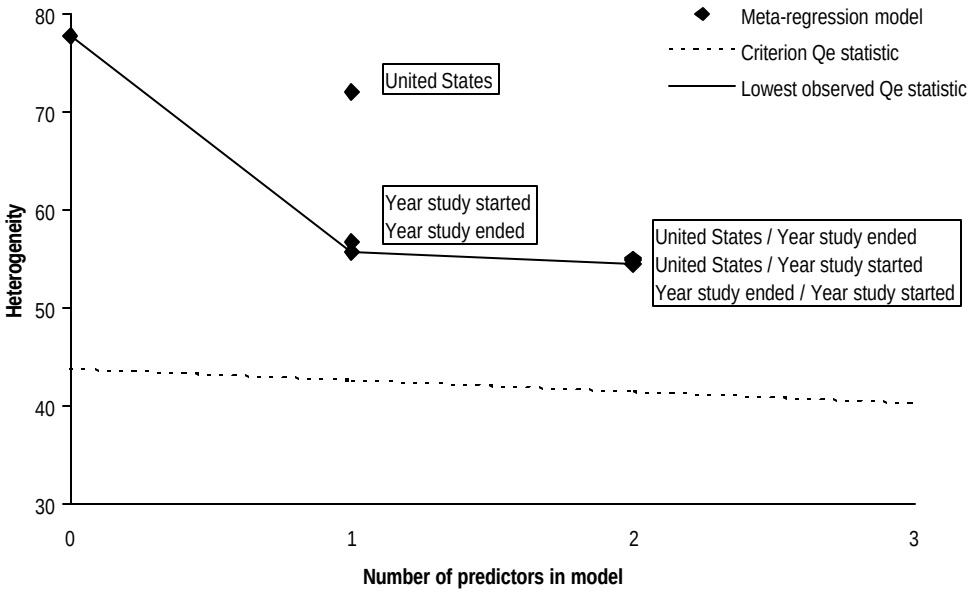
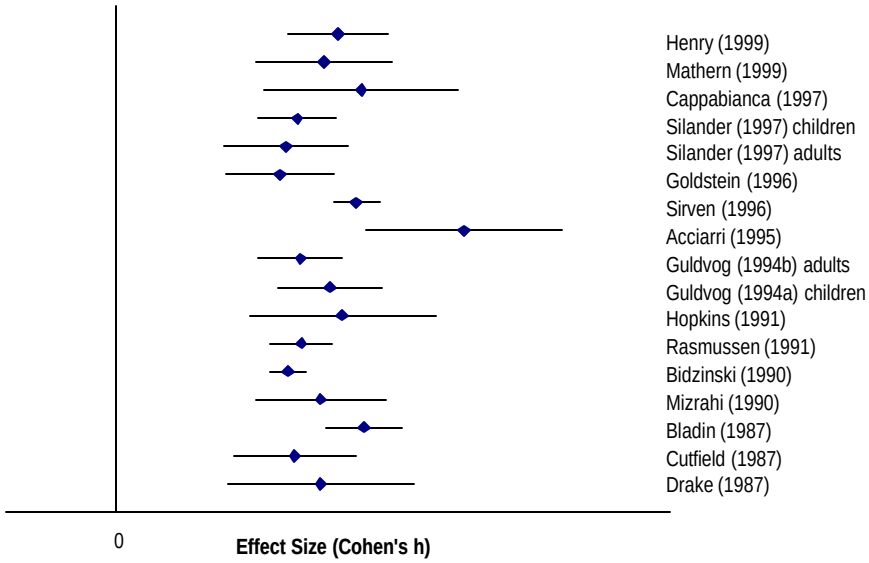


Figure 41. Forest plot: temporal lobe surgery and seizure-free undefined



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 42. Meta-regression: temporal lobe surgery and seizure-free undefined

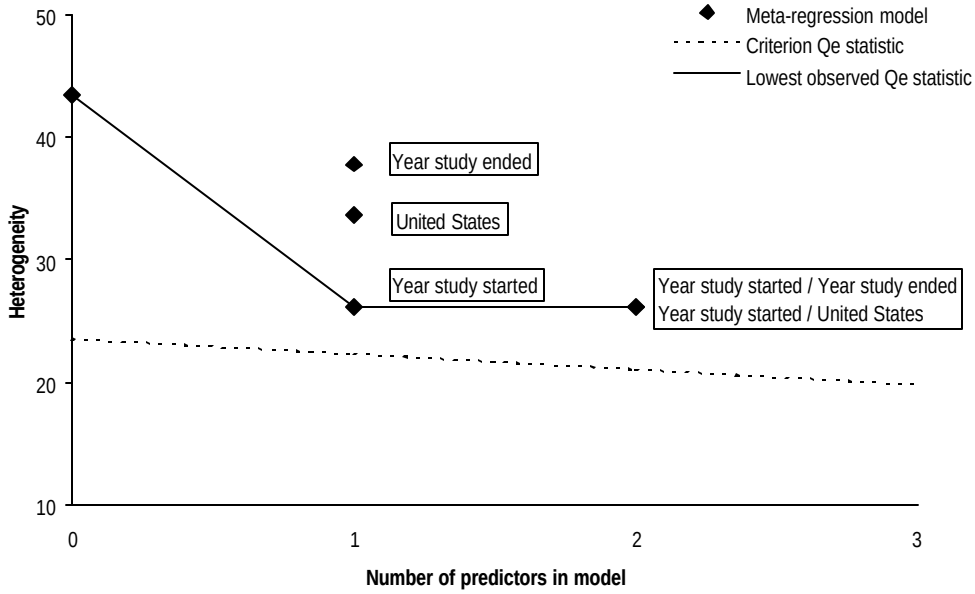


Figure 43. Forest plot: temporal lobe surgery and patient age at surgery

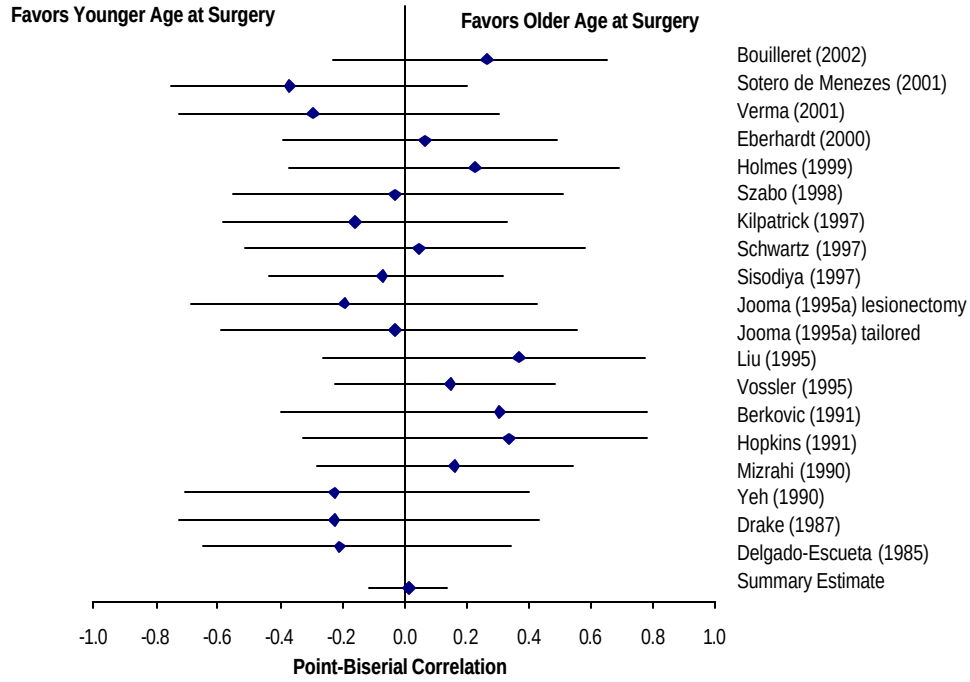


Figure 44. Forest plot: temporal lobe surgery and patient age at onset of seizures

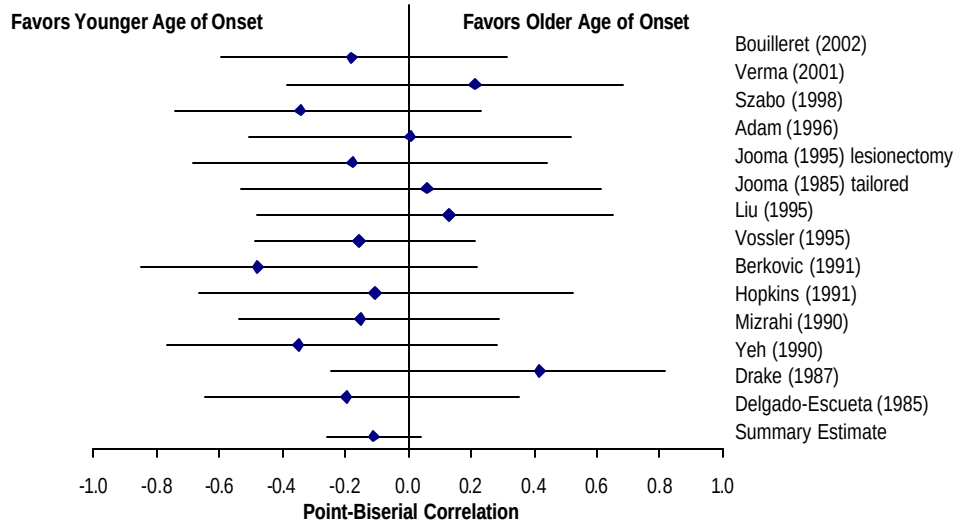


Figure 45. Forest plot: temporal lobe surgery and duration of epilepsy prior to surgery

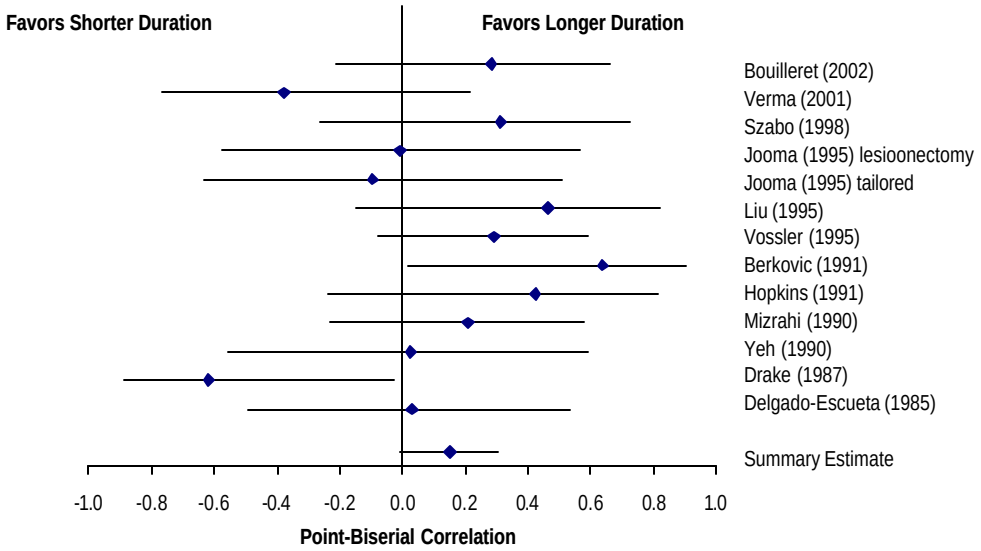


Figure 46. Forest plot: temporal lobe surgery and male and female patients

Studies reported the success of surgery among male and female patients

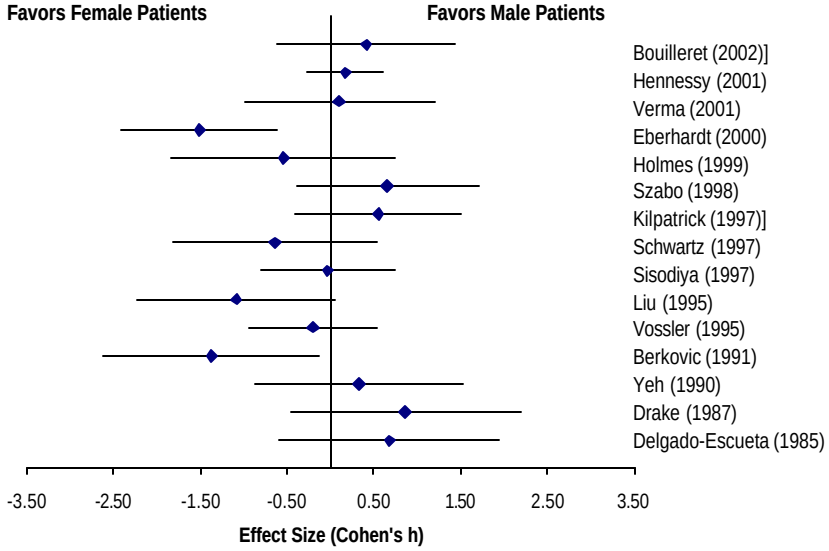


Figure 47. Meta-regression: temporal lobe surgery and male and female patients

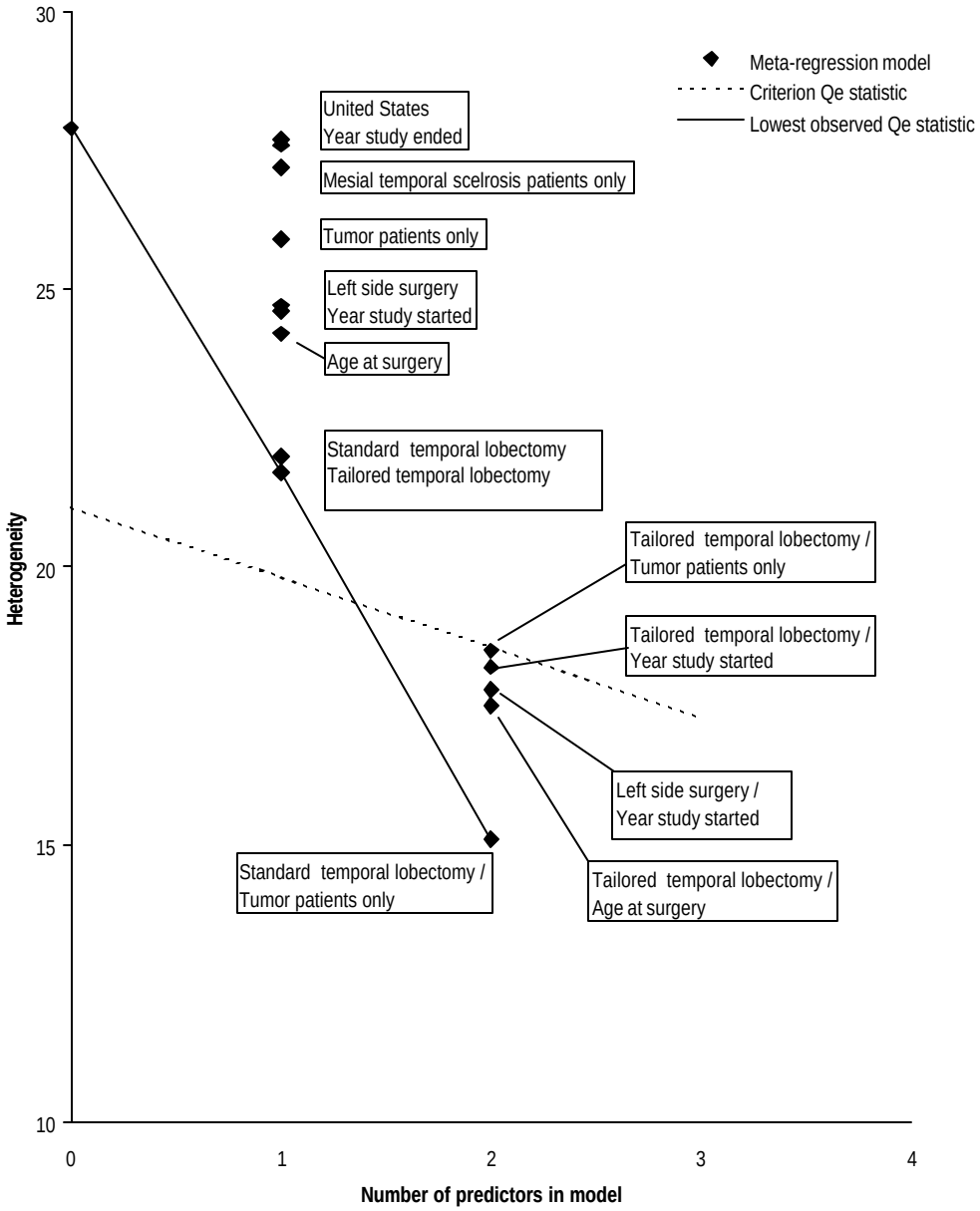


Figure 48. Forest plot: temporal lobe surgery and location of surgery

Studies reported the success of surgery among patients with left side and right side surgery

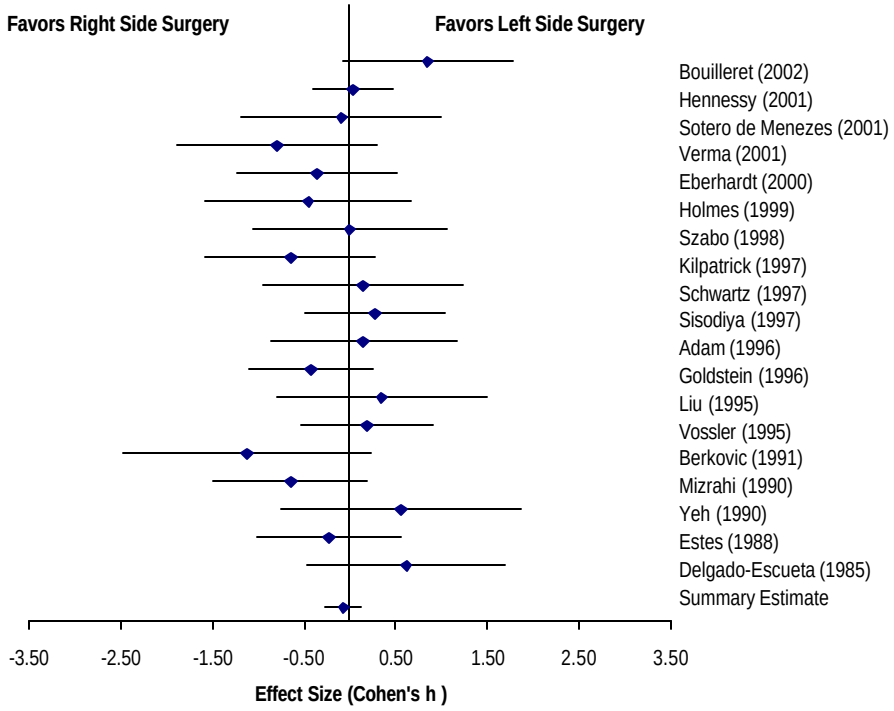


Figure 49. Forest plot: temporal lobe surgery and simple partial seizures

Studies reported the success of surgery in patients with and without simple partial seizures (SPS)

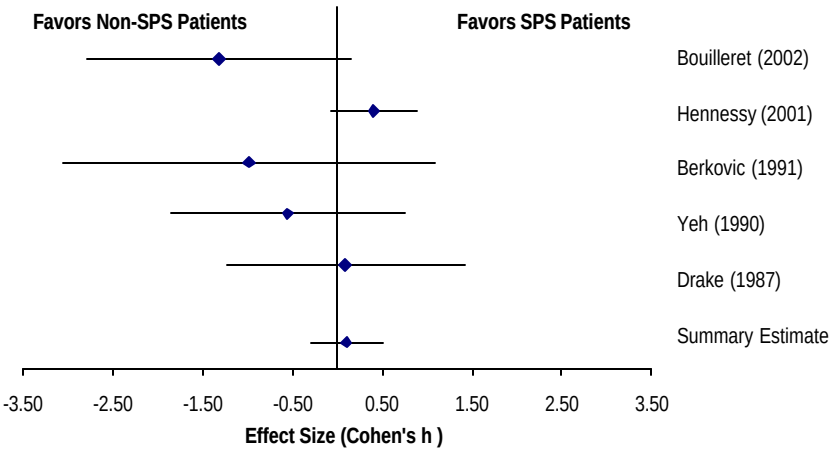
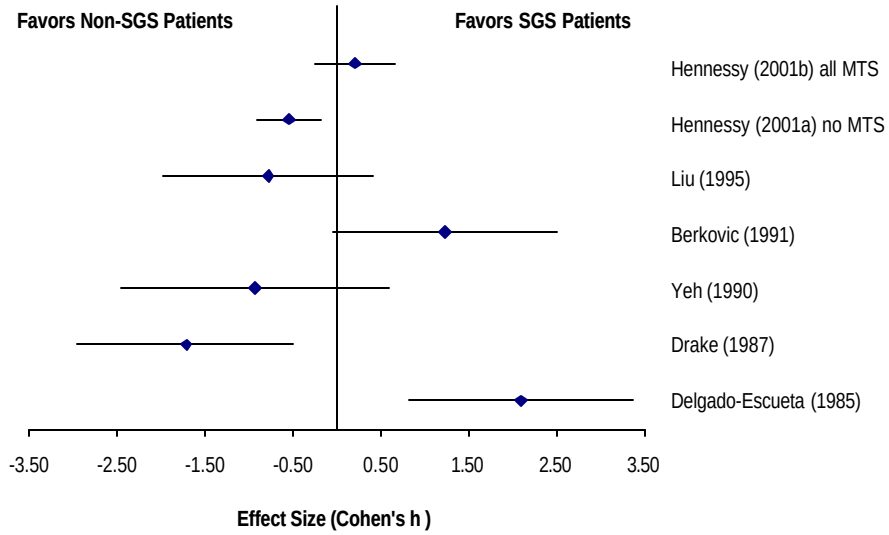


Figure 50. Forest plot: temporal lobe surgery and secondarily generalized seizures

Studies reported the success of surgery among patients with and without secondarily generalized seizures (SGS)



MTS = Patients with mesial temporal sclerosis

Figure 51. Meta-regression: temporal lobe surgery and secondarily generalized seizures

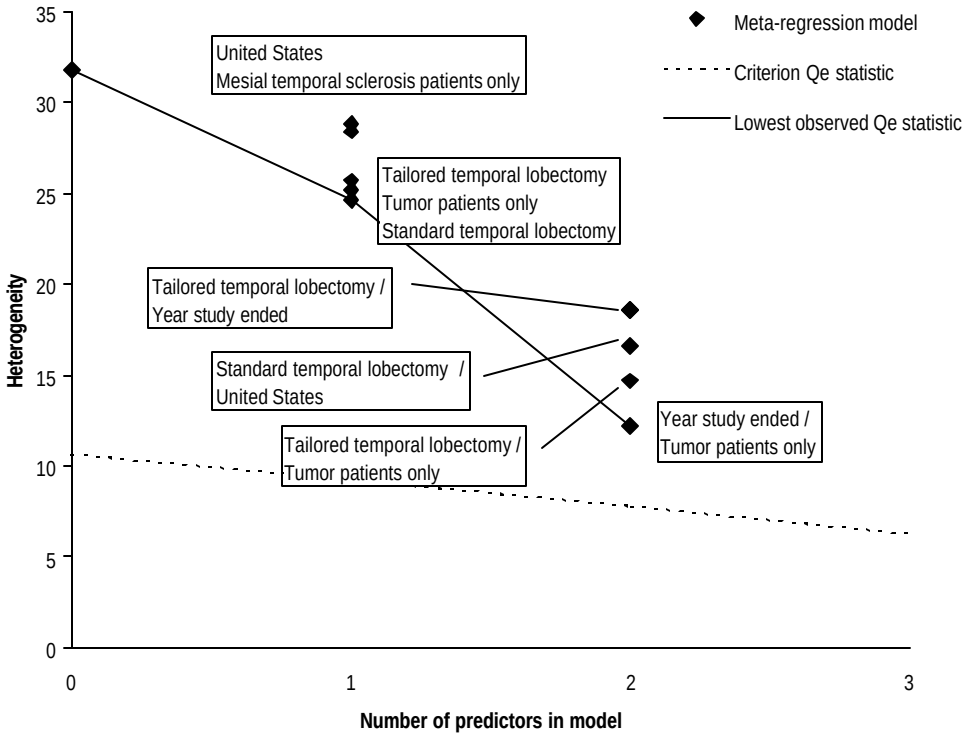
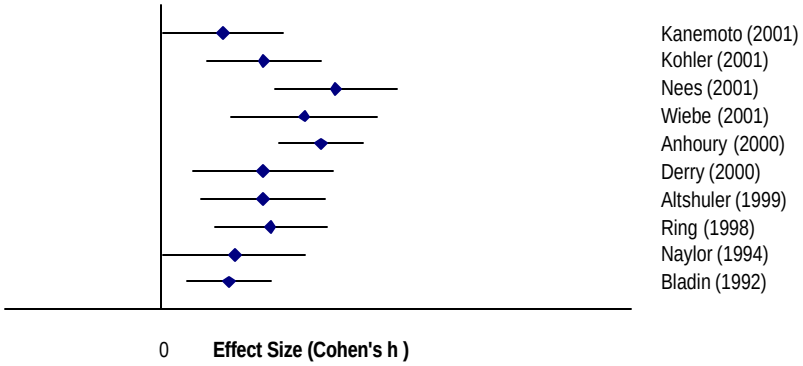


Figure 52. Forest plot: temporal lobe surgery and new cases of depression



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 53. Meta-regression: temporal lobe surgery and new cases of depression

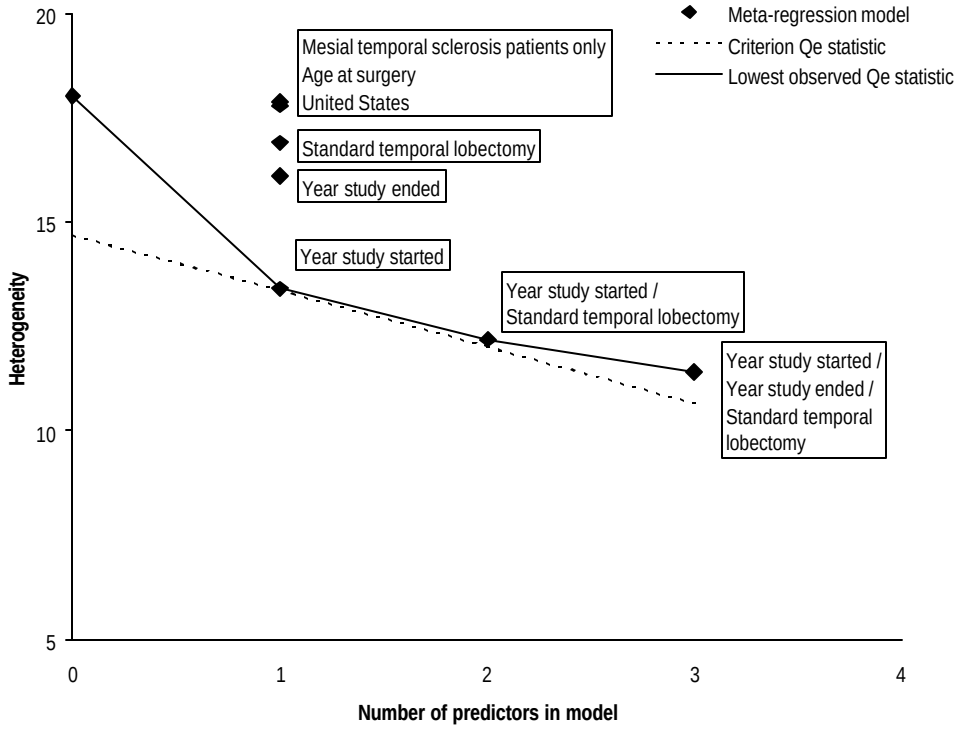
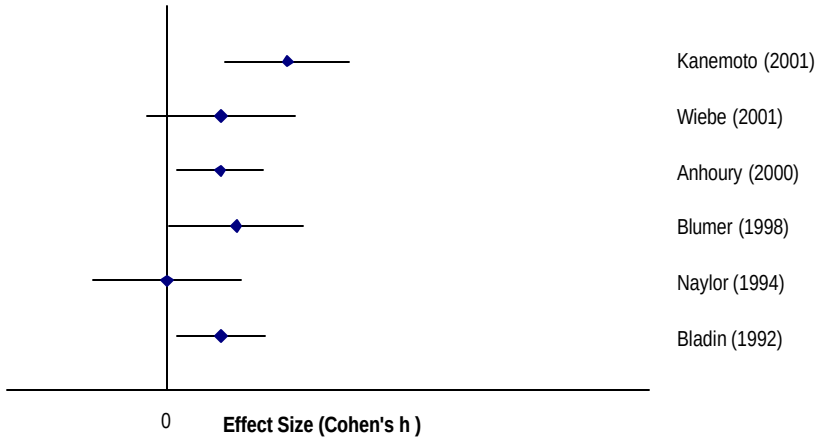


Figure 54. Forest plot: temporal lobe surgery and new cases of psychosis



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 55. Threshold analysis: temporal lobe surgery and new cases of psychosis

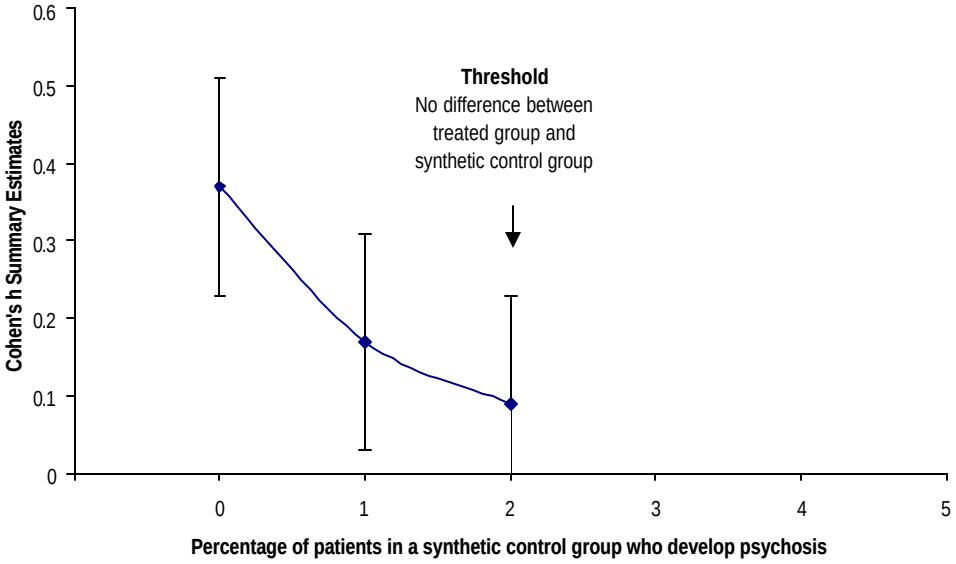
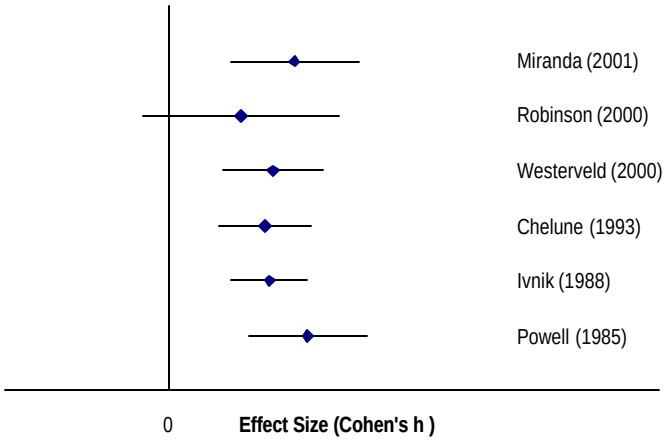


Figure 56. Forest plot: temporal lobe surgery and decreases in IQ after surgery

Studies reported individuals with significant decreases in IQ after surgery



A scale is not show n because the effect sizes were not calculated with actual control groups

Figure 57. Threshold analysis: temporal lobe surgery and decreases in IQ after surgery

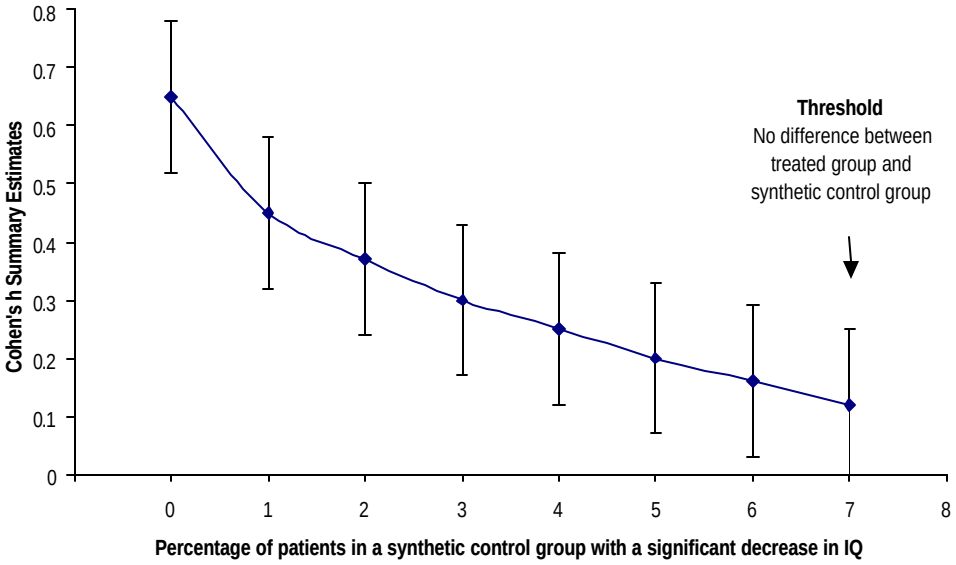
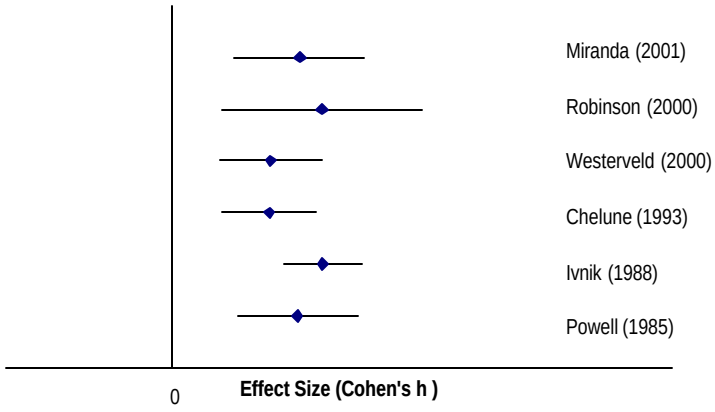


Figure 58. Forest plot: temporal lobe surgery and increases in IQ after surgery

Studies reported individuals with significant increases in IQ after surgery



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 59. Threshold analysis: temporal lobe surgery and increases in IQ after surgery

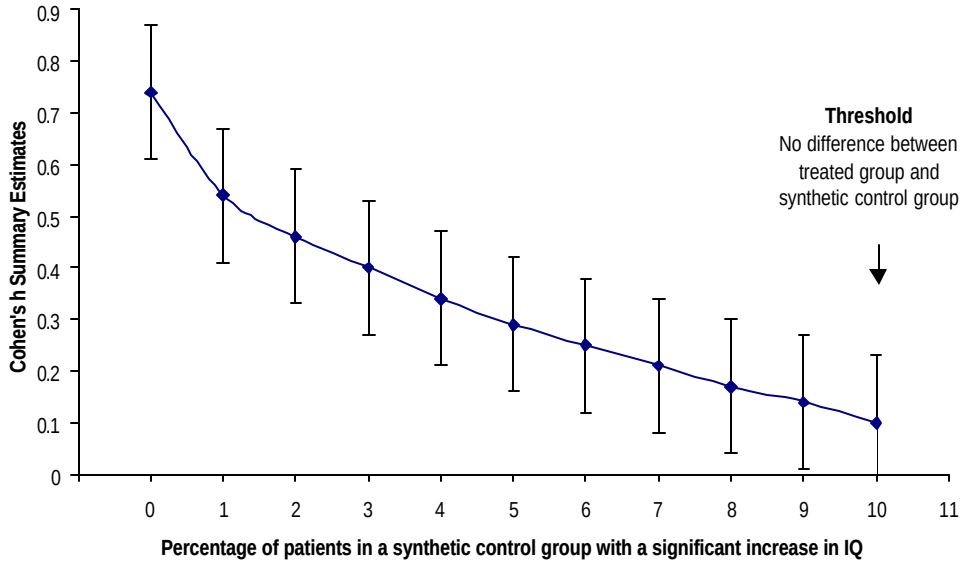


Figure 60. Forest plot: temporal lobe surgery and changes in mean IQ

Studies reported both presurgery and postsurgery mean IQ

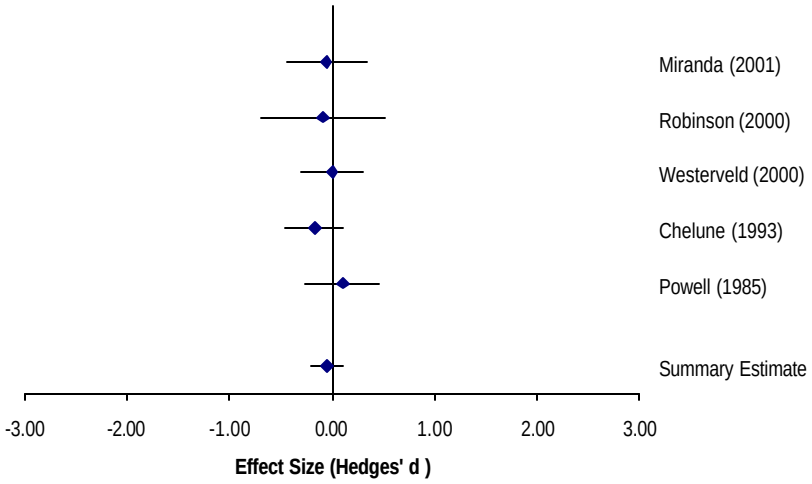


Figure 61. Temporal lobe surgery: changes in memory after surgery

Studies reported individuals with significant changes in memory after surgery

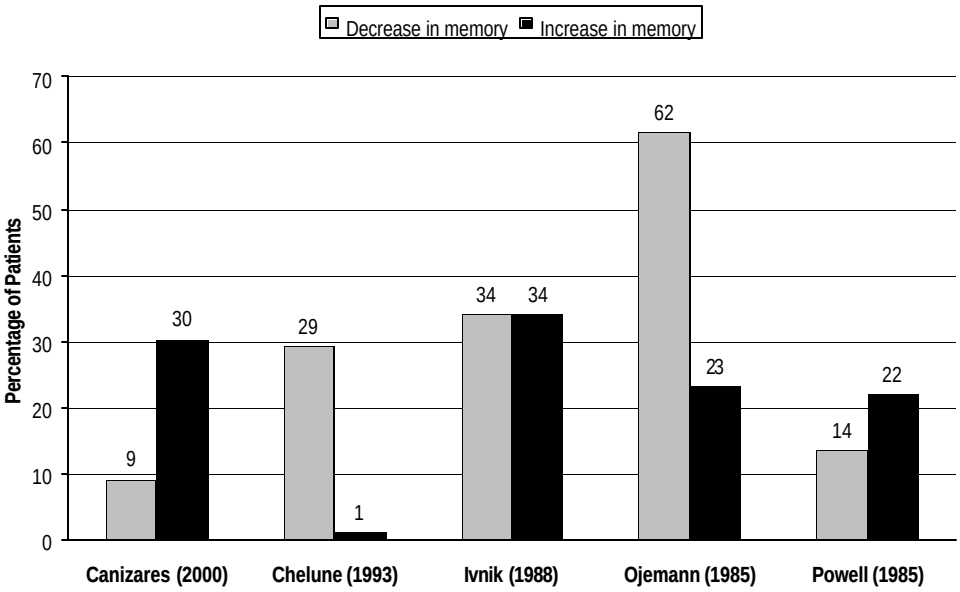
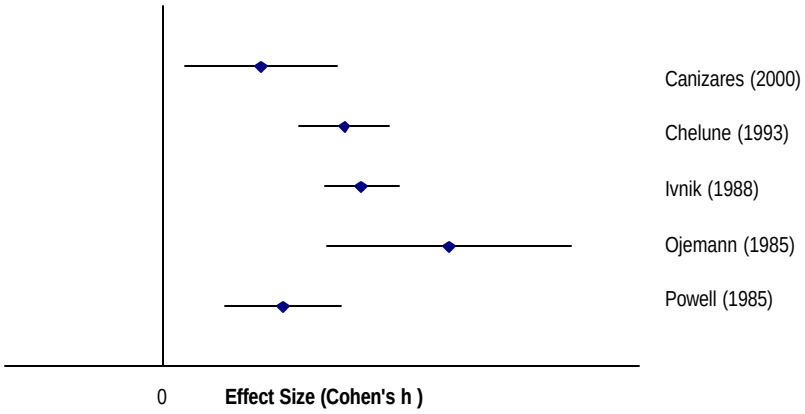


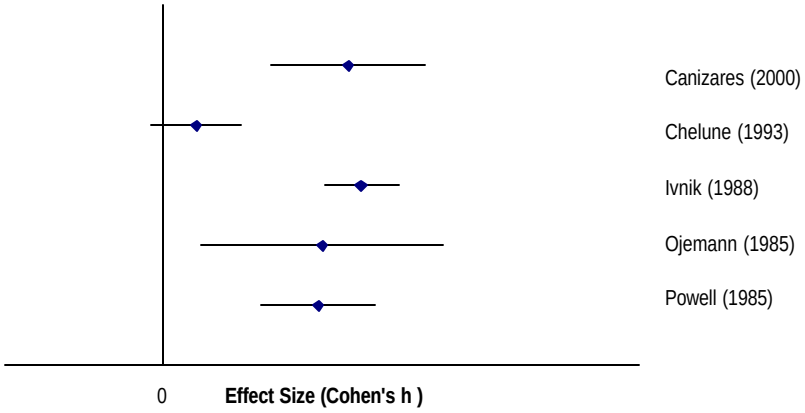
Figure 62. Forest plot: temporal lobe surgery and changes in memory

Decreases in memory scores



A scale is not shown because the effect sizes were not calculated with actual control groups

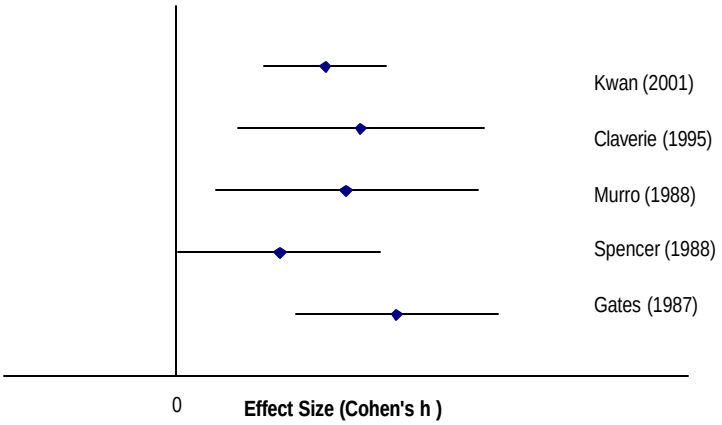
Increases in memory score.



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 63. Forest plot: corpus callosotomy and reduction in seizure frequency

Studies reported patients with at least a 90 percent reduction in seizure frequency after surgery



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 64. Threshold analysis: corpus callosotomy and reduction in seizure frequency

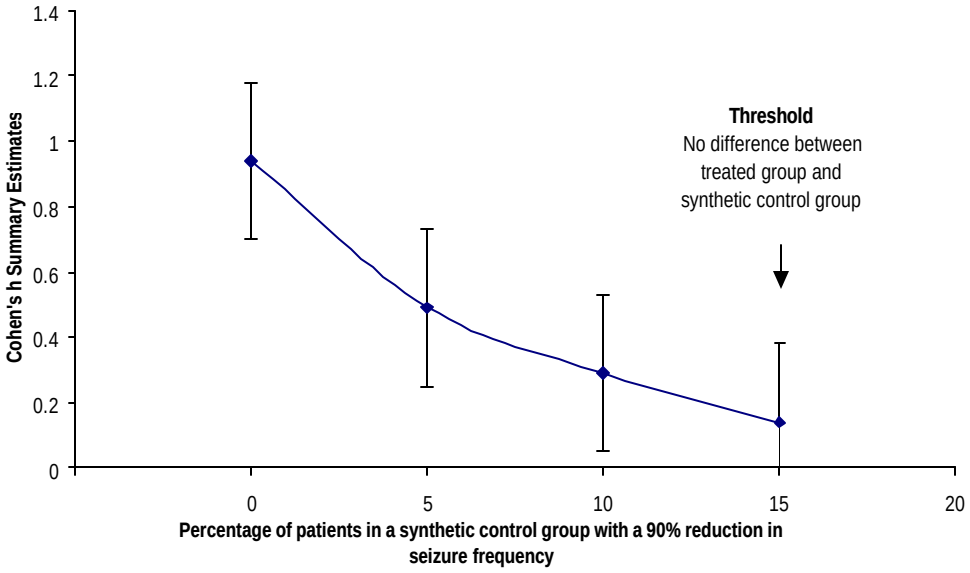


Figure 65. Forest plot: corpus callosotomy and no benefit from surgery

Studies reported patients who had no change or an increase in seizure frequency

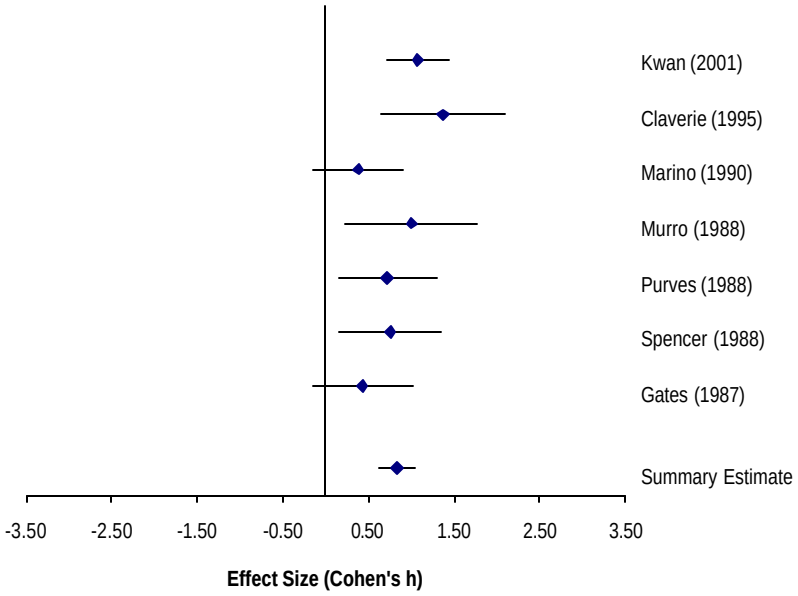


Figure 66. Forest plot: corpus callosotomy and patient age at surgery

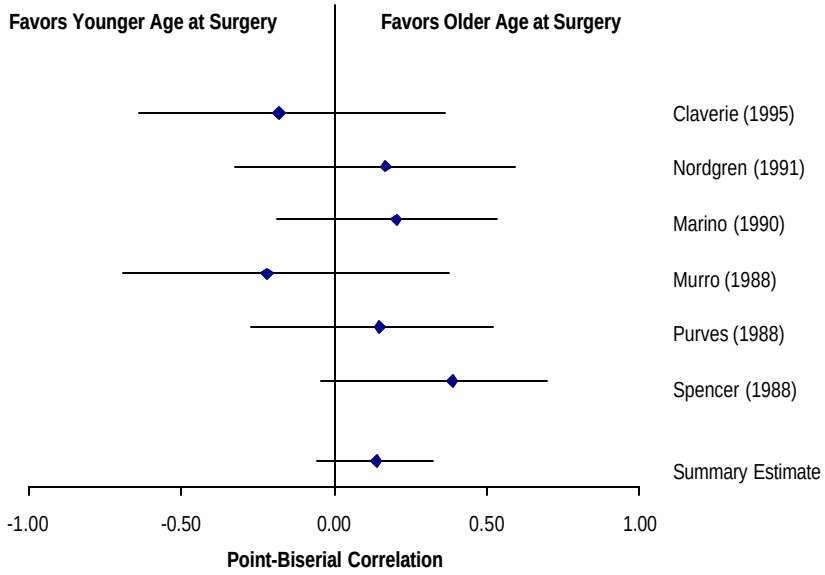


Figure 67. Forest plot: corpus callosotomy and patient age at onset of seizures

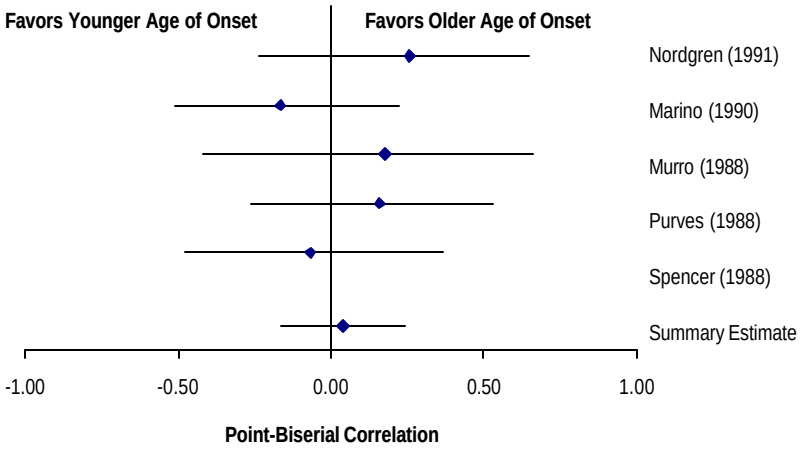


Figure 68. Forest plot: corpus callosotomy and duration of epilepsy prior to surgery

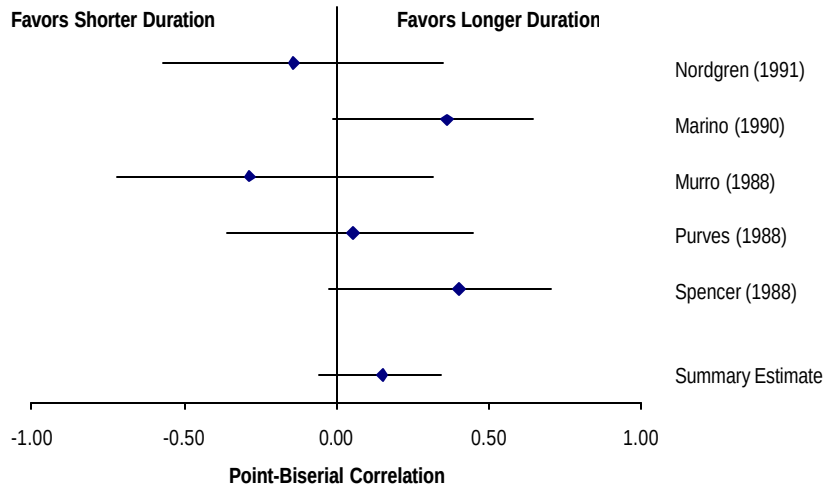
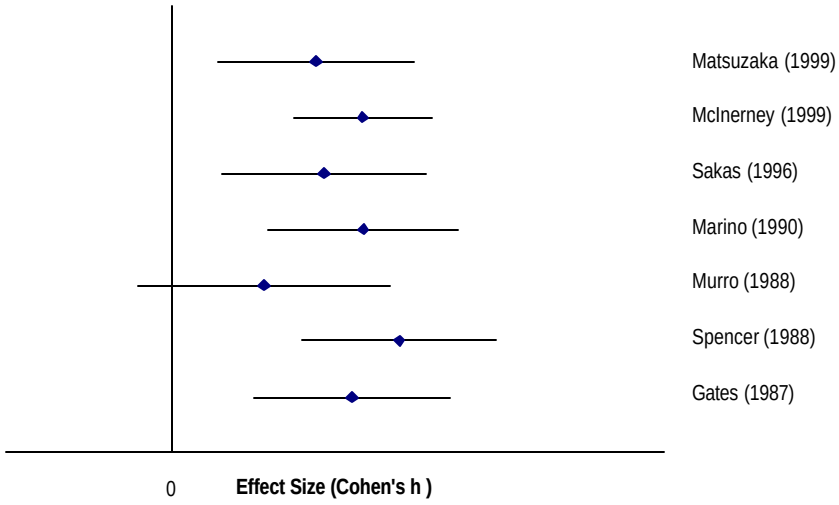


Figure 69. Forest plot: corpus callosotomy and most disabling seizures

Studies reported patients who were free of their most disabling seizures



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 70. Threshold analysis: corpus callosotomy and most disabling seizures

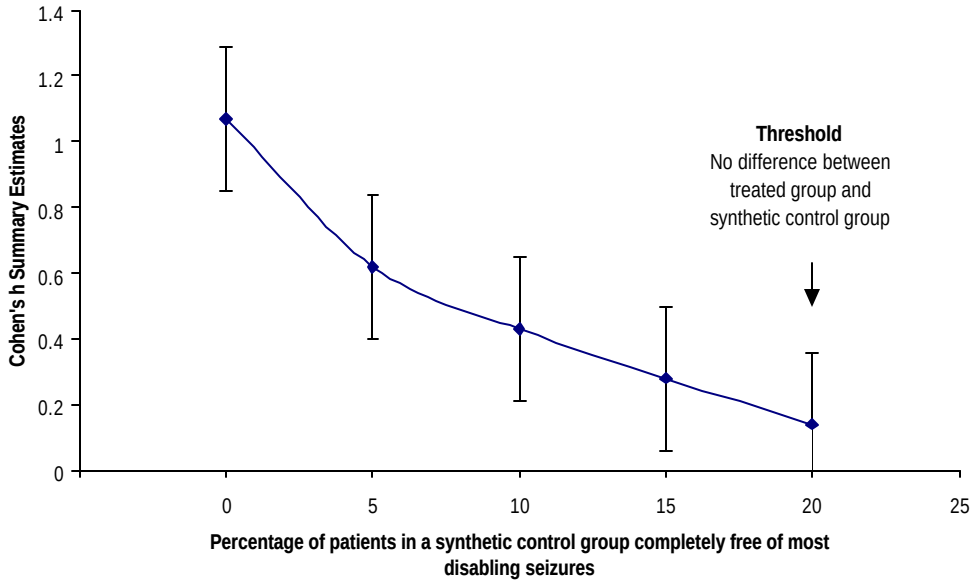
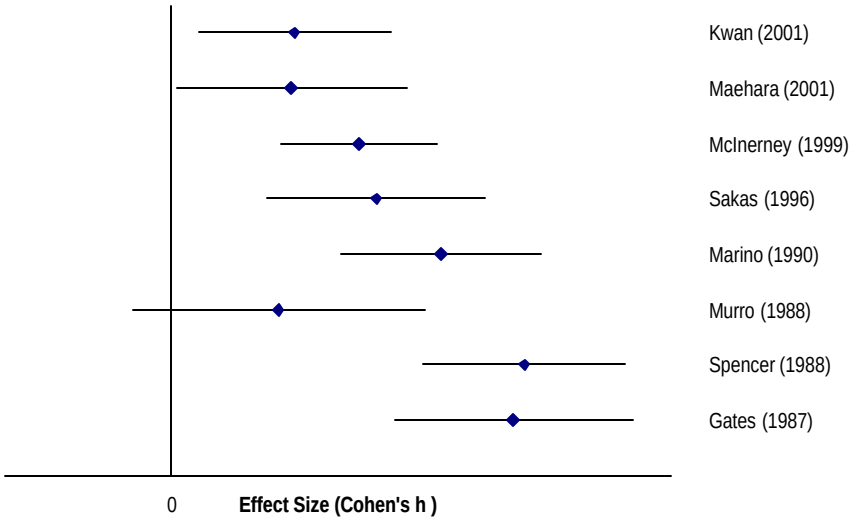


Figure 71. Forest plot: corpus callosotomy and generalized tonic-clonic seizures

Studies reported patients who were free of generalized tonic-clonic seizures



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 72. Meta-regression: corpus callosotomy and generalized tonic-clonic seizures

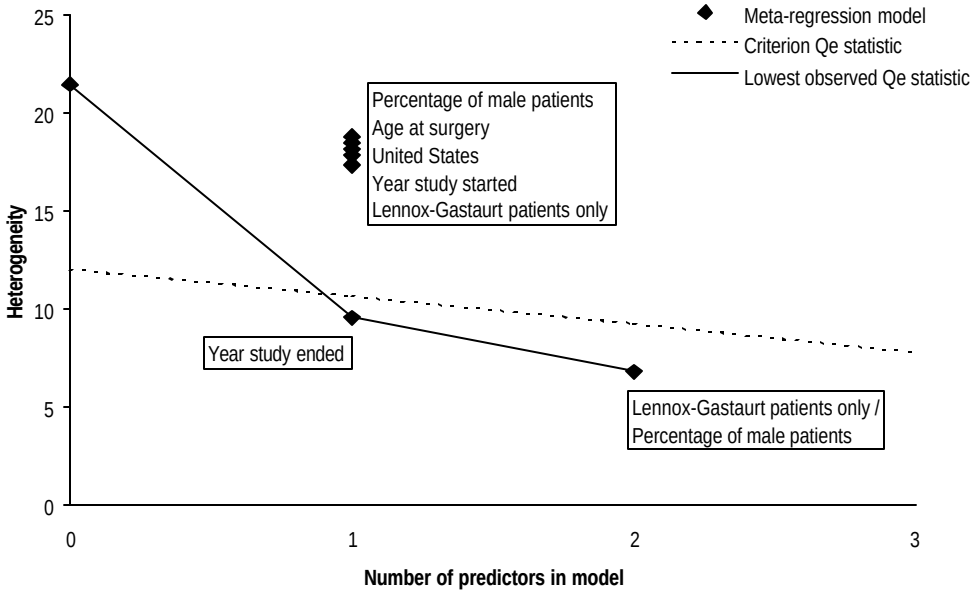


Figure 73. Threshold analysis: corpus callosotomy and generalized tonic-clonic seizures

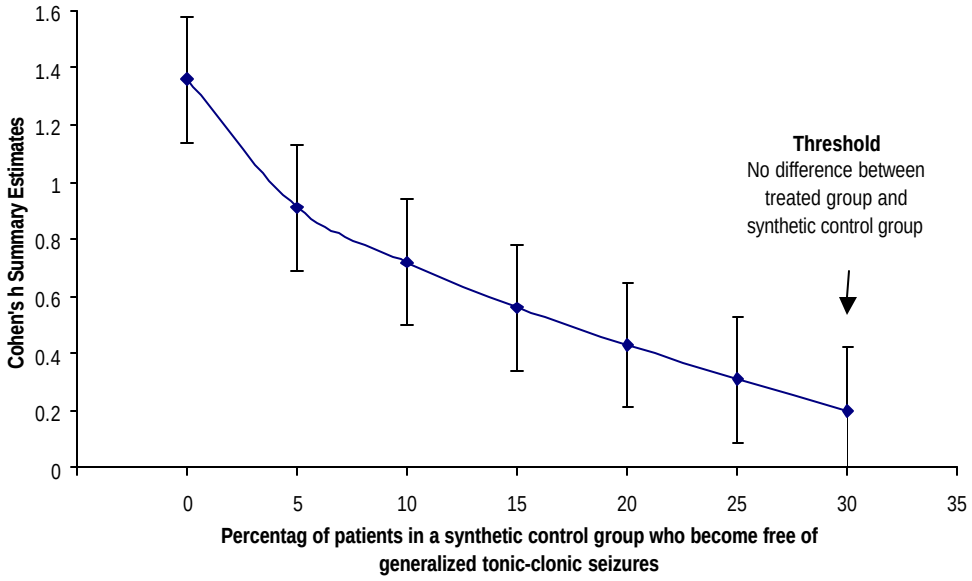
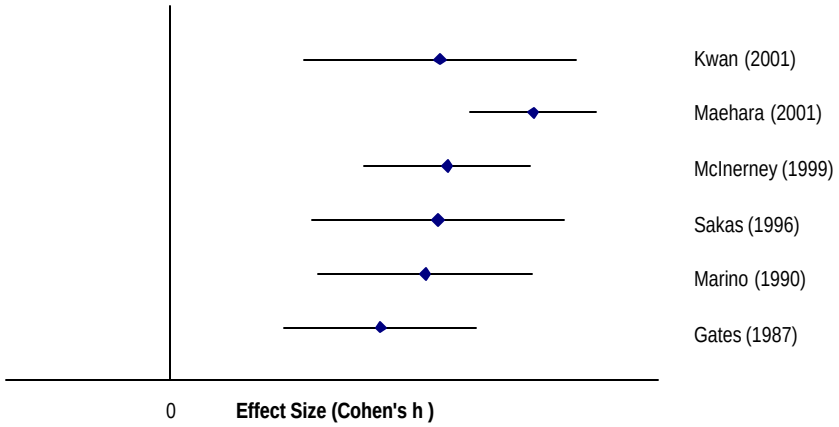


Figure 74. Forest plot: corpus callosotomy and atonic seizures

Studies reported patients who were free of atonic seizures



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 75. Threshold analysis: corpus callosotomy and atonic seizures

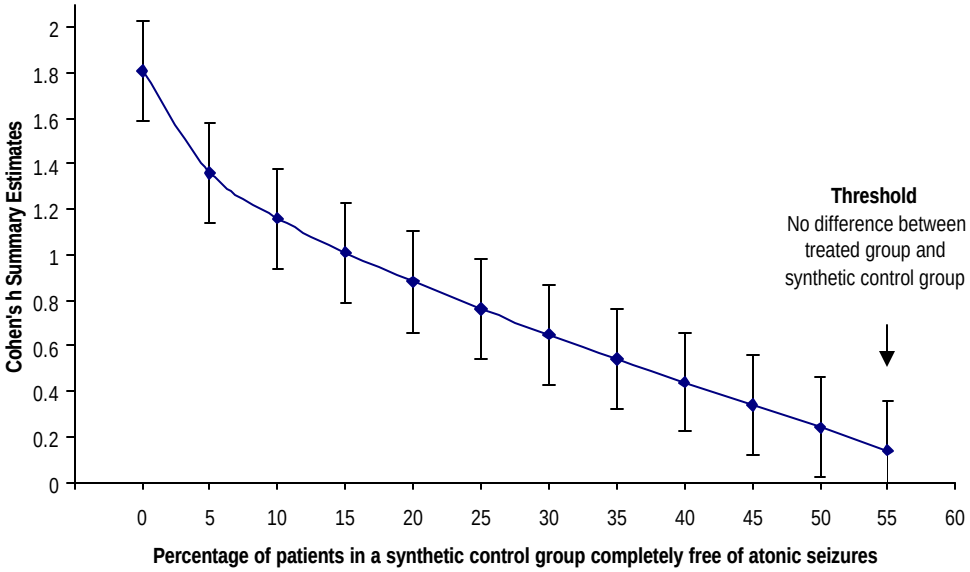
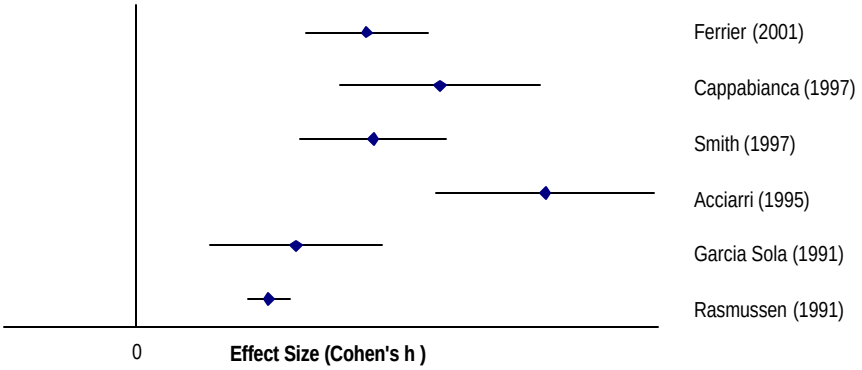


Figure 76. Forest plot: frontal lobe surgery and seizure-free (undefined)

Studies reported patients who were seizure-free undefined



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 77. Meta-regression: frontal lobe surgery and seizure-free (undefined)

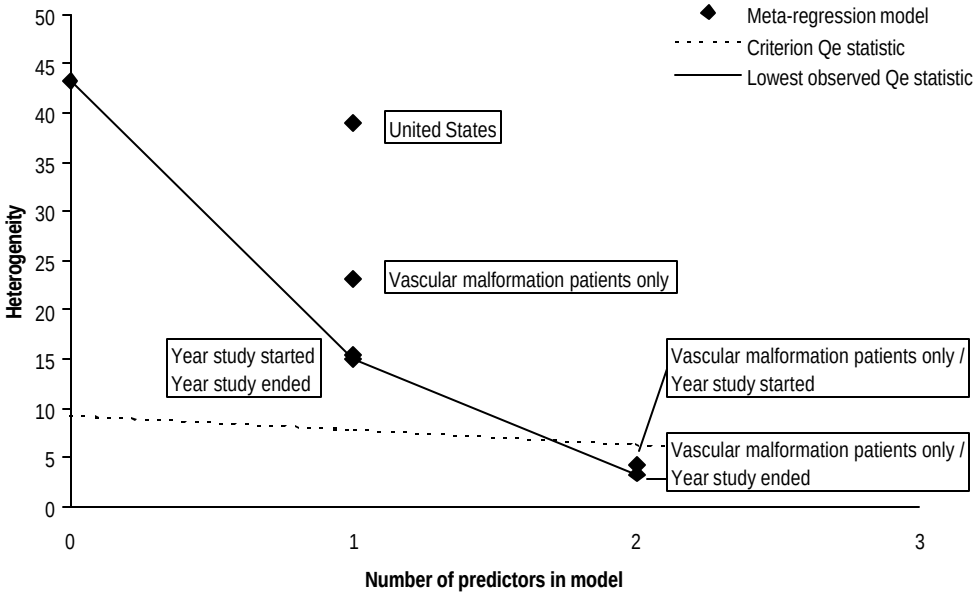
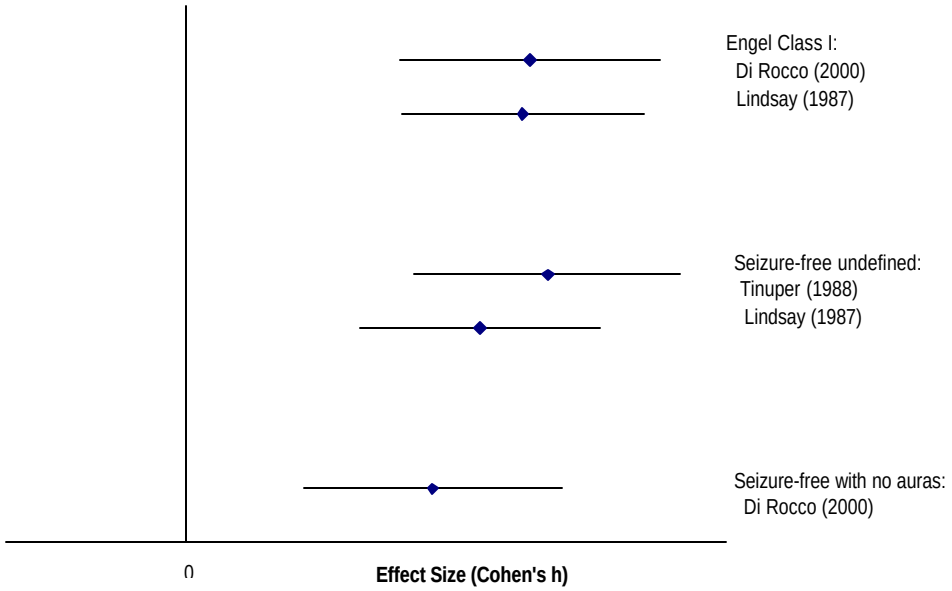
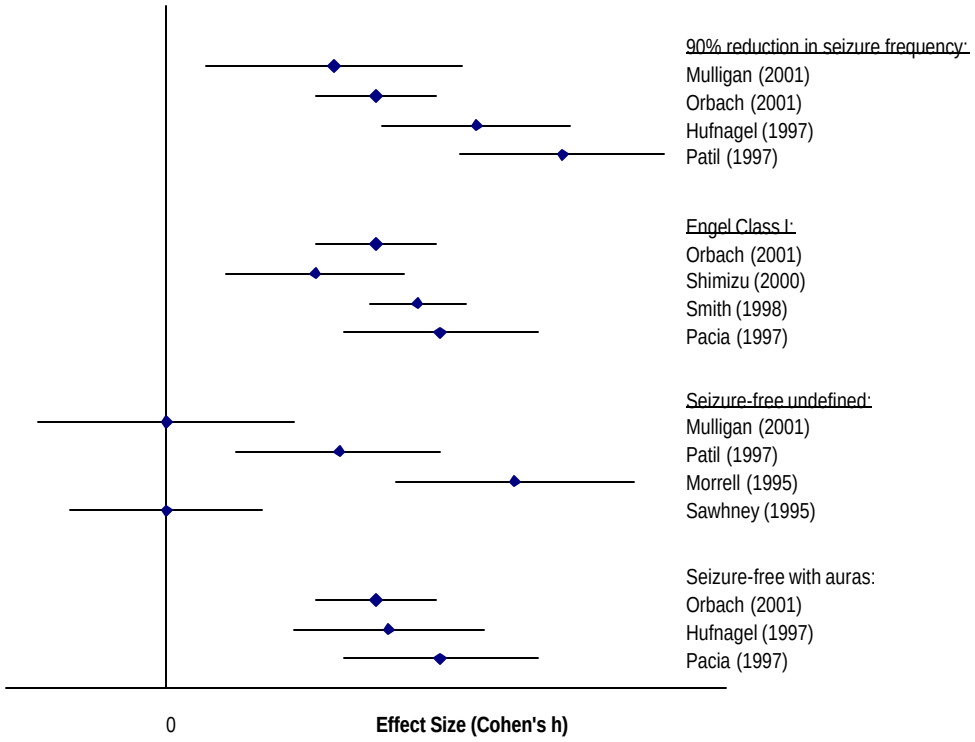


Figure 78. Forest plot: hemispherectomy and seizure-free outcomes



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 79. Forest plot: multiple subpial transection and seizure-free outcomes



A scale is not shown because the effect sizes were not calculated with actual control groups

Figure 80. Forest plot: multiple subpial transection and patient age at surgery

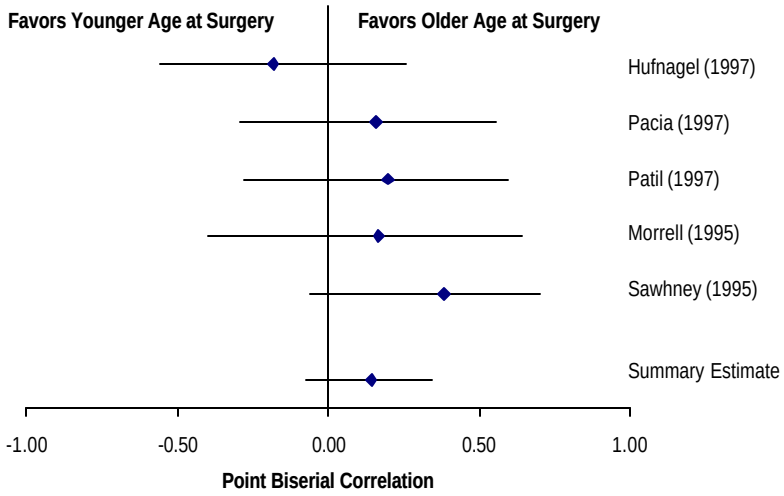


Figure 81. Forest plot: multiple subpial transection and male and female patients

Studies reported the success of surgery among male and female patients

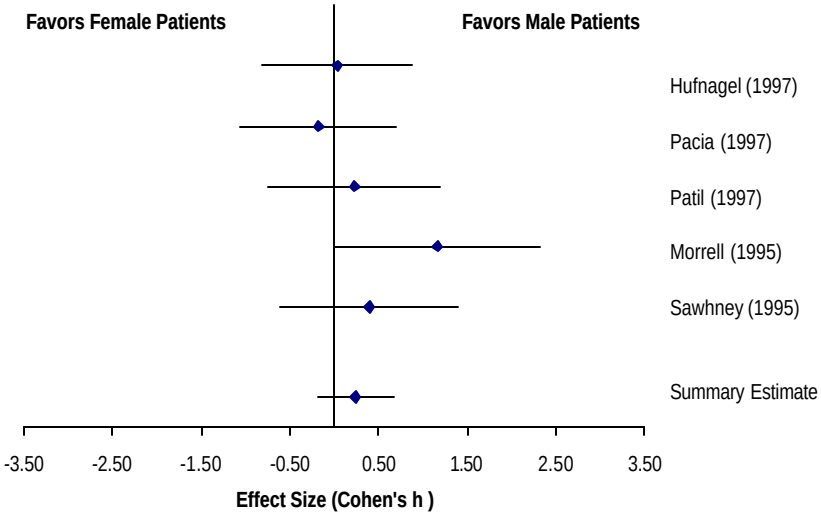


Figure 82. Meta-regression: vagal nerve stimulation and perce ntage change in seizure frequency

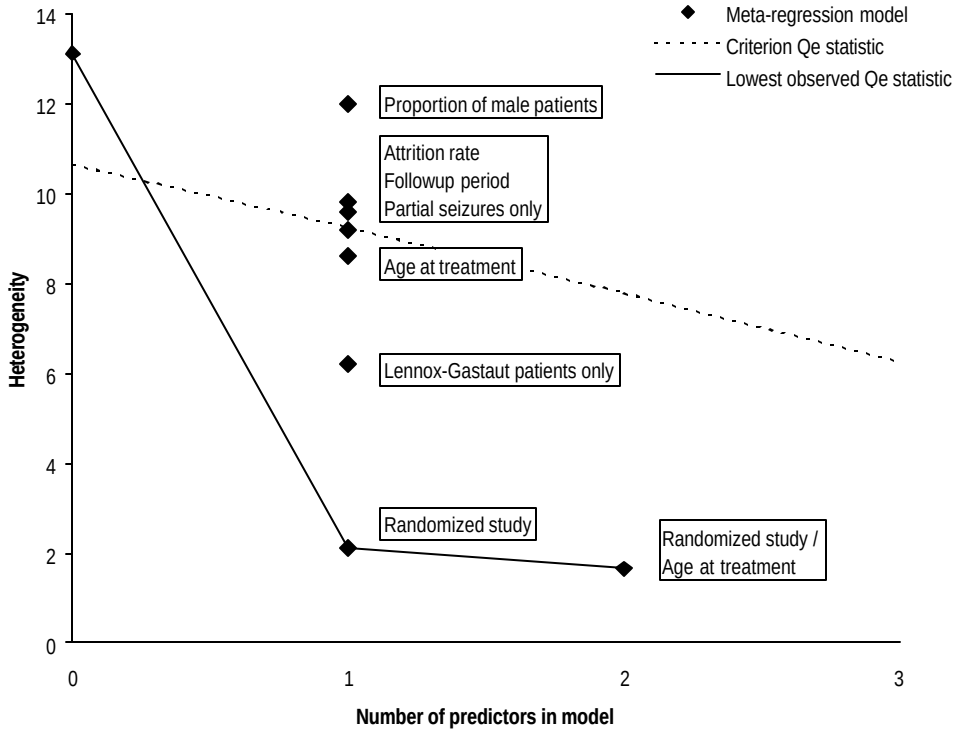
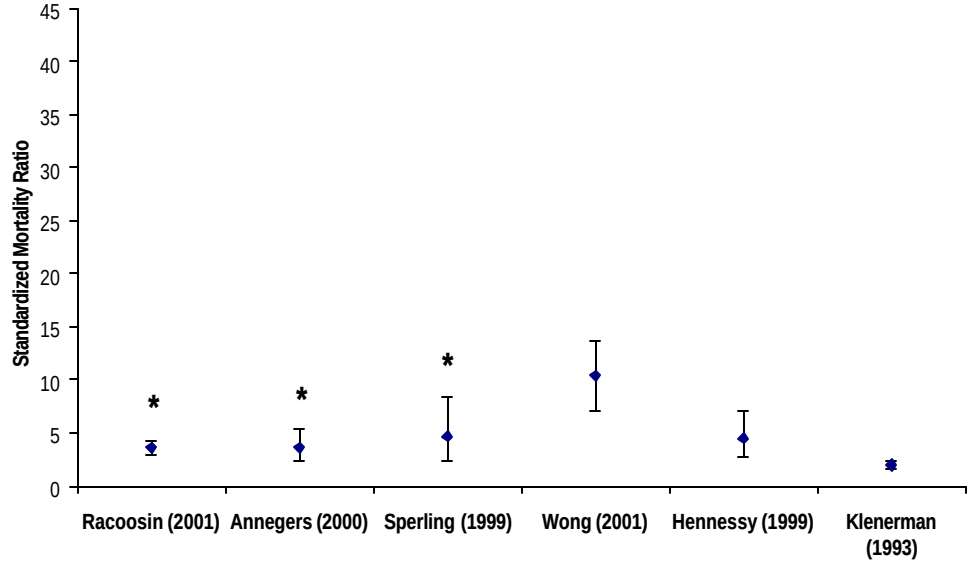
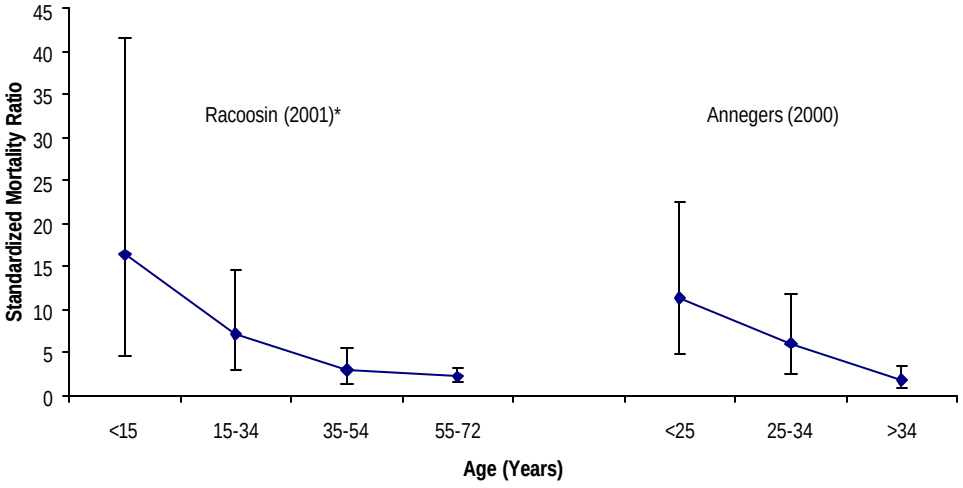


Figure 83. Standardized mortality ratios for overall mortality



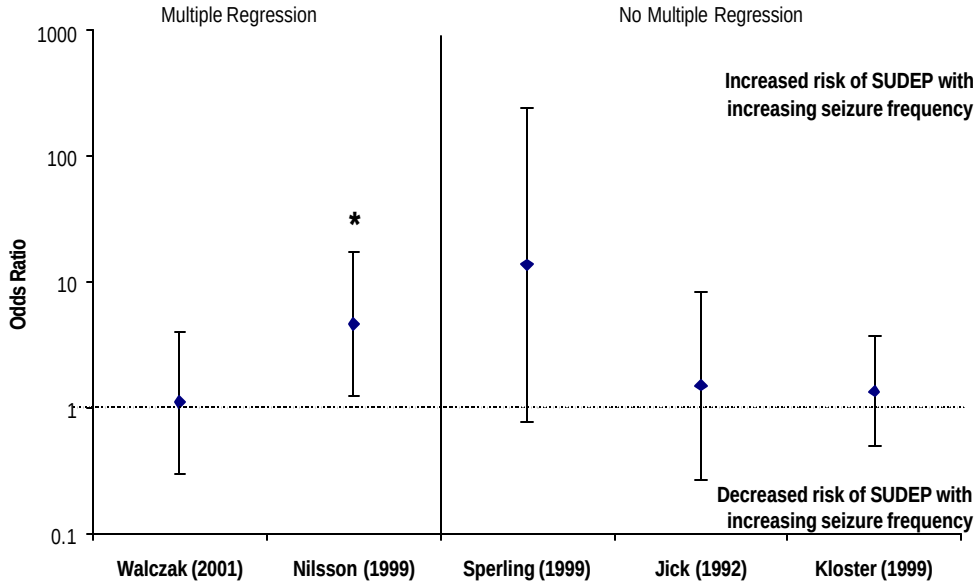
*Studies conducted in the United States

Figure 84. Standardized mortality ratios for age-specific mortality



*Approximate SMRs for this study calculated by ECRI

Figure 85. Risk of SUDEP with increasing seizure frequency



*The study by Nilsson, Farahmand, Persson et al.[374] reported relative risks rather than odds ratios.

Figure 86. Risk of SUDEP in patients with tonic-clonic seizures

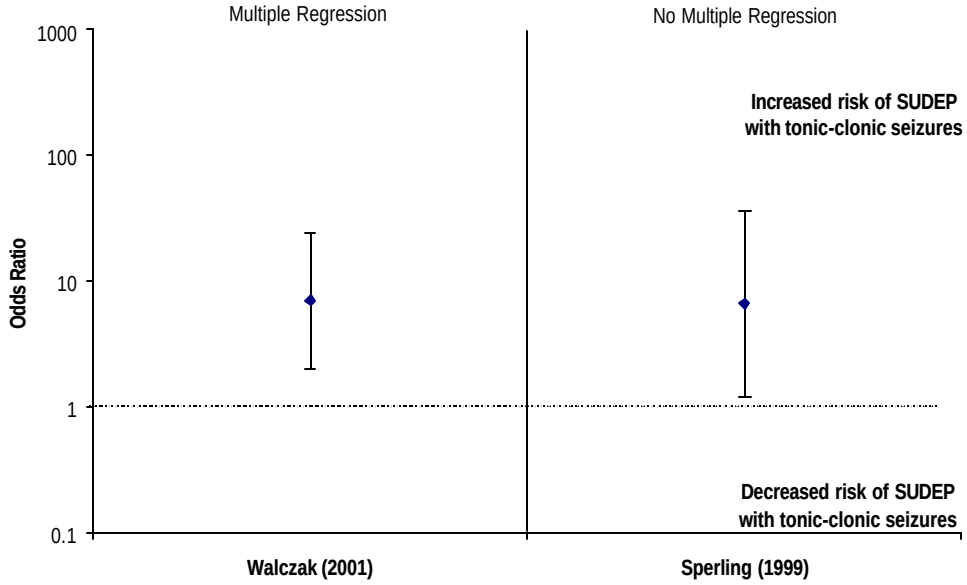
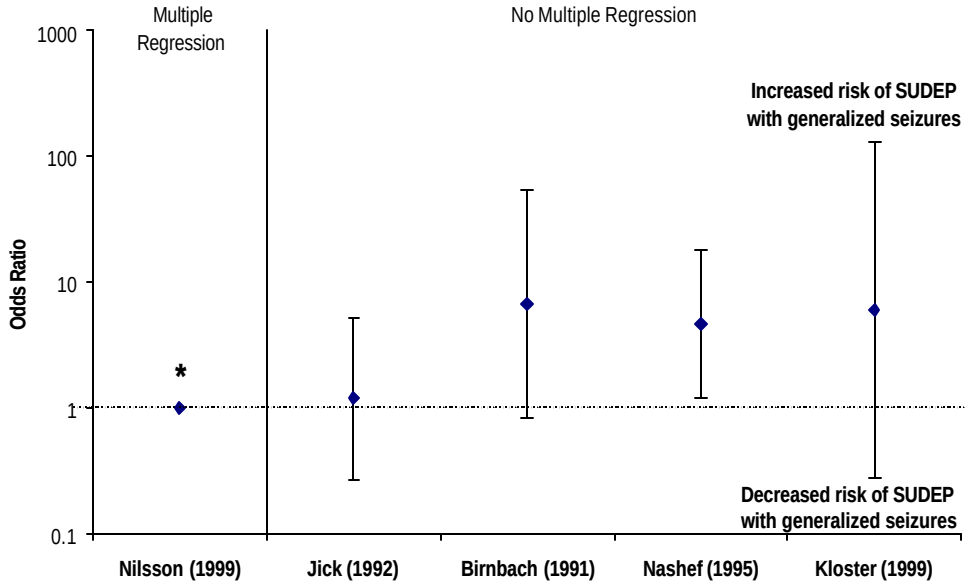


Figure 87. Risk of SUDEP in patients with generalized seizures (primary and/or secondary)



*The study by Nilsson, Farahmand, Persson et al.[374] reported relative risks rather than odds ratios.